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THE ARCHITECTURAL RECORD

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RUSSELL STURGIS

One of the most frequent, copious and valued of the collaborators of the Architectural Record has just passed over to the majority. The death of Russell Sturgis was by no means premature, according to the ordinary standard of longevity. He had overpassed the Scriptural limit, being in his seventy-third year. But to those who knew him, the death was premature. That so eager and omnivorous an intellectual curiosity should have been balked, so avid a capacity of intellectual enjoyment, have been nullified, before the curiosity showed any signs of dulling, the enjoyment any signs of slackening, still seems to his friends a cruel and untimely blow.

RUSSELL STURGIS
1836—1909

It has been set forth by the obituaries of the daily press that Mr. Sturgis, though his architectural work entitles him to recognition as one of the practitioners of his early years who practiced architecture with credit and scholarship, was not a born architect. His works, the buildings for Yale, the pretty Gothic Savings Bank in Albany, entitled him to respect, although, with quite characteristic generosity, he assigned the chief measure of credit for this last to his associate in it, Mr. Babb. Richardson, when he was in Albany doing his share of the Capitol, and doing the City Hall, spoke of this building even with enthusiasm. But Sturgis was not a Richardson. Whatever could be attained by study, in an art, which appealed to him, he might quite be relied upon to attain. But he had not that "impulse to create" which results in the manifestation of an artistic individuality. Whereas anybody can pick out the work of Richardson, and any very sensitive person can discriminate it from that of his imitators, Sturgis's work is simply up to the best level of scholarly attainment of the time and not assignable to an individual. One may say that he would always rather discuss than design. And it was a good thing for him and for the rest of us that he was early withdrawn from design to discussion. The first time I remember hearing his name was in answer to my inquiry, addressed to John Dennett of the Nation, who had written a certain criticism of the then new and now superseded and demolished old Park Bank, on the site of the present edifice of the same name, which had appeared in that periodical. From that time until his death, criticism and not creation was evidently the real line of action for Russell Sturgis. His knowledge was so wide, so "encyclopaediacal," it has been called since his death. his anxiety to be right on any point of fact, and to take nothing for granted without proof, was so keen, that his reader might go along with him on any disputed or disputable point with a singular confidence, even though that reader might differ from the artistic judgment that accompanied the erudition. The present writer, in reviewing the "Dictionary of Architecture," took occasion to quote from Samuel Johnson to the effect that Mr. Sturgis never "frolicked in conjecture." When the editor next met his reviewer, he said: "I am exceedingly obliged to you for pointing that out." This accuracy and secureness in matters of fact are a great source of strength to a critic or an historian. They give his readers the confidence which Mr. Sturgis, among careful readers, never failed to inspire. Readers of the Architectural Record have profited by this care and this circumspection exerted upon a great variety of subjects, historical and contemporaneous, for now these many years.

One may fairly say of Mr. Sturgis that,

(Continued on page 220.)

The
Architectural Record

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FIG. 1. THE OLD EAST RIVER BRIDGE (1883).
John A. Roebling, Engineer.

Our Four Big Bridges

One of the reflections which force themselves upon the New Yorker who has occasion to investigate for himself, and in an amateur way, the way of the lover of beauty and fitness, the two biggest and costliest of the bridges at present under construction by this municipality of Greater New York, is a discouraging reflection. How grievous is the injustice that is done us by our press.

In the matter of public works the press seems to be interested only in the incidental scandals which may arise out of them. All, or almost all, columns are joyously opened to scandals about bridges, as about other costly and important public works. If they turn out to be, or are even plausibly alleged to be, inadequately designed, that is well. If they can plausibly be alleged to be "gigantic jobs," that is immensely better. But if they are simply uncommonly and creditably well done, so as to be among the glories of the city and the country, you will be long in finding out that uninteresting fact from the ordinary newspapers. One who has of his own motion investigated the construction of the newer bridges across the East River, for example, feels himself to have a grievance when he finds a wealth of interest in them, and a just source of local pride, of which his newspaper had given him no hint whatever. Not only has it not told him "the half." It has had nothing at all to say about the matter. Perhaps he ought not repine at having so nearly a virgin field, and ought to be grateful even for his grievance. But what a social symptom the grievance nevertheless is!

In truth, one who visits the Black-

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well's Island and the Manhattan Bridges finds great matter for wonder and admiration at the enormous artistic advance they show upon the older bridges across the East River. This is very especially the case with the present writer, who may be pardoned for recalling that he made, a quarter of a century ago, a critical examination of the then new and now old East River Bridge, tor Harper's Weekly, in which the results published, were so far as he knew or knows the first attempt that was made in this country at an aesthetic consideration of an important engineering work. It was an endeavor to test an engineering construction by architectural principles—to judge it, as Ruskin has it, "by those

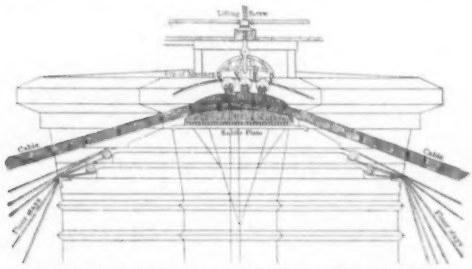


Fig. 2. Old East River Bridge—Section of Tower, Showing Saddle.

larger laws in the sense and scope of which all men are builders, whom every hour sees laying the stubble or the stone." Specifically, what one demands in such a work is "the adaptation of form to function," or, in other words, the following out of the indications inherent in the mechanical dispositions and devices, instead of the imposition upon these of ideal or of conventional forms. In this mode of procedure, as an eminent American architect has described it, you do not so much design your edifice as you "watch it grow." And, in the old East River Bridge, it is interesting and instructive to note that the successes are all won by letting the structure "do itself," so to speak, the failures all incurred by forcing it to do something else. (Fig. 1.) Even to-day, much as with our present lights it might have been still further lightened and skeletonized, there is no finer thing in its kind to be seen than the gossamer structure of the metal, the airy fabric that swings between the towers.

> The spider's touch, how exquisitely fine!
> Feels in each thread and lives along the line.

The stiffening truss itself of the roadway asserts itself as a stiffening truss without asserting itself unduly. And nothing could be happier than the relation between the "camber" of the roadway, with the enormous radius of its slowly climbing curve, and the swifter swoop of the catenary curve of the suspensory structure. These things, it is plain, are simply submissions to the dictates of mechanical laws and of the actual conditions of the erection, the requirement in the interest of navigation of a minimum height above the river at the centre, the requirement in the interest of accessibility and accommodation of the situation of the terminals. The resultant relation is artistically perfect. The height of the towers, again, is fixed by the length of the span and the imposed necessity of keeping the bottom of the catenary at a fixed height above the river; the bulk of the towers, given the necessary massiveness of their masonry, by the load they have to sustain and the necessity of maintaining them against any wind that can blow. These things, again, are as perfectly satisfactory to the eye as we must assume that they are responsive to the mechanical requirements. But in the detail of them we cannot help seeing that caprice has been allowed to play its part; that the form is by no means "inevitable;" is, in fact, contradictory of the function. The function of the towers, for example, is merely that of cable-holders. Nobody would ever guess it to look at them. The curve of the cables continues over the saddles, which are shaped accordingly, and it is a necessary condition of the operation that the cables should move freely in the saddles, thus providing for expansion and contraction under stress of the weather, allowing the "play," which the late Abram S. Hewitt, in his admirable address at the inauguration of the great work, pointed out was so essential to the working of so huge a structure

of expansive and contractile metal. Quite manifestly the cable-holders should have been so modelled as to express this function, modelled in their turn into "saddle-backed" roofs. In fact, they are so modelled, in deference to antique monuments which had nothing whatever to do with the case, as quite to conceal this primary function as though it were something to be ashamed of, instead of something to be exhibited and emphasized. The half catenary seems to be imbedded in the tower on each side, and there to cease and determine, instead of being a necessary link in a contiquous and mobile chain. One more or less vaguely feels, in the presence of the actual work, how "irrelevant, incompetent and impertinent" to the purpose of the structure is this actual tower, with its flat top, of which the flatness is emphasized by the projecting conventional cornice copied from monumental structures of far different conditions and purposes. But one perceives it in a clear and even in a ludicrous light when he examines the section (Fig. 2) in which the course of the cables is shown, and the form of the enveloping structure, which has nothing whatever to do with the case. The new architecture of spun metal discredits and shames the outworn and out-of-place survivals of the older architecture in massive masonry. One is a "graphic linear demonstration" of the mechanical facts of the case, the other a crude approximation to an expression of them

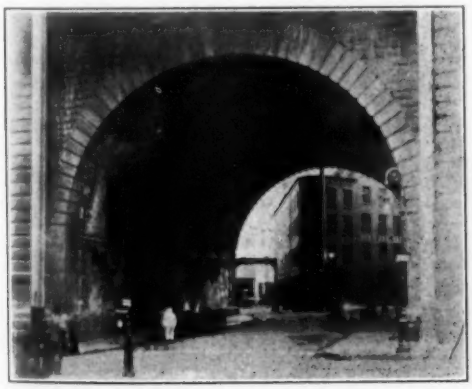


Fig. 3. Old East River Bridge—A Street Crossing.

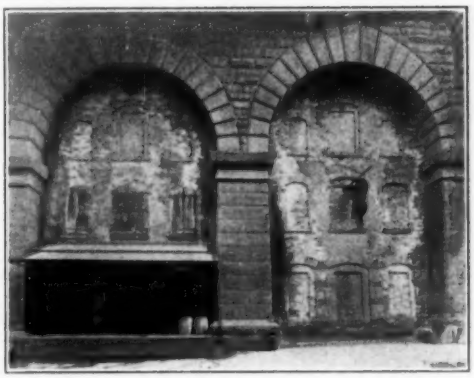


Fig. 4. Old East River Bridge Warehouses in Manhattan Approach.

where it is not a senseless departure from them.

The anchorages of the old bridge share the defects of the towers. The savage who essays a suspension bridge across a gulch in the Andes must drive down stakes or heap up stones or tie his grass-woven cable to a tree to hold it in place while his crazy structure is swinging. To hold the cable-end firmly is equally the function of the anchorage of that wonder of mechanical refinement, the modern suspension bridge in metal. But there is no mechanical refinement about the design of these anchorages. They are simply huge cubes of masonry into which the cable disappears, not by which it is visibly clutched and held. Most spectators of the Brooklyn Bridge probably fail to distinguish the anchorage, which is an integral part of the structure, from the approaches of which the purpose is simply to give access to it. In these approaches, and in these alone, of the old bridge, architectural counsel was invoked by the designer, although unhappily the design of the sheds at either end was confided to the untutored and unassisted engineer, with grievous results, the most grievous of which is, perhaps, that the great structure itself is rendered quite invisible from either end, and that you have to go out upon the river or scale a skyscraper to get a look at it. Upon the whole, the approaches vindicate the taking of architectural counsel. But there is one detail of them

Fig. 5. The Williamsburg Bridge; Department of Bridges, Engineers.

which in its results is more than a detail, and that is the employment, in all the arches of the approach, of the form called "Florentine," that is, circular within and pointed without, and hence deepest at the crown and shallowest at the haunches. As was remarked in the study to which reference has been made, this disposition is "the reverse of that which would have been dictated by mechanical considerations alone," and whoever discards mechanical considerations in a great work of utility like this assumes a grave responsibility. It is true that the form enhances the perspective effect and the apparent length of a diminishing arcade, such as the arcade of the approach is, looking landward, or from the larger to the smaller arches. But it correspondingly shortens the apparent length and diminishes the perspective effect of the enlarging arcade in the view toward the river, which is the more important view. All this, however, does not prevent the Manhattan approach to the old bridge from being tremendously impressive. The great openings that span the streets (Fig. 3) have the advantage of giving, what one finds so rarely in our rectangular town, random and accidental and picturesque points of view, and some sense of wonder and expectation and mystery, as of

> an arch wherethrough
> Gleams that untraveled world.

And one does not in the least regret, contrariwise one welcomes, the effect of the humble brick fronts, of red and yellow, which have been put in as filling to the intermediate arches to utilize them as practical warehouses and places of storage. (Fig. 4.) The manner in which these interpolated fronts have weathered and mildewed, within only a quarter of a century, makes them as grateful objects as a hunter after the picturesque can find in the street architecture of New York, gives New York, indeed, so far as their effect goes, that air of an "Eternal City" which it hardly anywhere else conveys, excepting in the rough and smoke-stained masonry and brickwork of the old Harlem Tunnel, which such a spectator regrets to see being supplanted by frameworks of metal. The one lamentable addition to the approaches of the bridge since its erection is the slim metallic supports of the widened roadway, which are not only perfectly unimpressive and unattractive in themselves, but which tend to vulgarize and destroy the effect of the massive masonry before which they are placed, and without any real utilitarian excuse, since it is quite plain that the widened roadway could equally have

Fig. 6. The Williamsburg Bridge—Base of Tower.

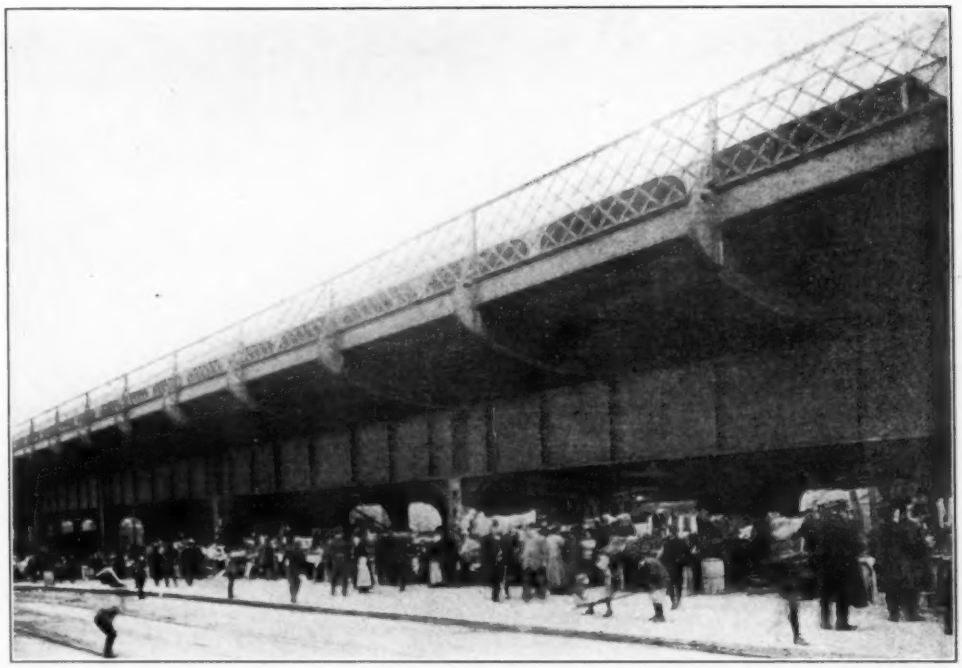


FIG. 7. APPROACH TO WILLIAMSBURG BRIDGE.

been carried upon projecting brackets as upon vertical stilts, and would in that case have even enhanced the effect which it now disfigures. But, when all is said against it that can fairly be said, it will remain true that the old bridge is a great credit to its builders, a valuable artistic possession of the city which it serves with a service so far transcending the expectations of its projectors.

The Williamsburg Bridge, not far from midway, in point of time, between the old East River Bridge and these two later, of which one is hardly finished and the other in an early stage of its construction, doubtless shows a scientific advance upon its predecessor, so active and fruitful in the history of engineering was the decade or more that intervened between the completion of Roebling's work and the beginning of this. But by common consent there was no corresponding artistic advance. Quite the contrary. (Fig. 5.) In fact, the ugliness of the Williamsburg has been the means of an increased appreciation of the beauty of the East River. One does not imagine what stream the later could suitably span, unless, indeed, modern progress should supersede Charon's ferry by a bridge for the traffic of the Styx, in which case passengers outward bound might perhaps feel that their conveyance was appropriate to their destination. In spite of the proverbial prohibition against speaking ill of the bridge which has carried you safely over, the Williamsburg, as a work of art, has no friends. The most conspicuous of the differences between the two is that the towers are in the older of masonry and in the later of metal. Presumably the difference was primarily economical. One can hardly imagine an engineer preferring a tower of attenuated metal to one of massive stonework if he were free to choose. And, indeed, it might well be wished that some architect worthy of the work had had the opportunity to show what grandly monumental objects stone towers as huge as those of the old bridge might be made by modelling them with reference to their functions, and not at all with reference to inapplicable precedents,

antique or mediaeval. But, even if one admits that masonry is the more eligible material, one is not forced to admit that nothing much better can be done with metal than was done with it in the towers of the Williamsburg. The Tour Eiffel already stood to show what grace and inspiration could be imparted to a metallic tower by the right designer. And Mr. Lindenthal's unexecuted project for a suspension bridge across the North

FIG. 8. PROPOSED MANHATTAN PLAZA, WILLIAMSBURG BRIDGE.
Palmer & Hornbostel, Architects.

River was also extant (was it not?), reproducing with great effectiveness, and on a scale not so very much smaller, the continuous concave outward curve from summit to base of the Parisian monument in metal. The chief ungainliness of the towers of the Williamsburg is imparted by the abrupt change of direction of their bounding lines, from a very pronounced "batter" above the roadway to a very nearly vertical line beneath it, an unhappy change that gives the towers an uncouth and bandy-legged aspect which no cleverness of detail could redeem. The most effective aspect of these towers is the view from underneath (Fig. 6), where this deviation of line is not noticeable, and where the towers, with the arch between them, form a really impressive example of the skeletonized architecture of metal, in which attenuation and articulation become the elements of impressiveness, as opposed to the massiveness and solidity of aspect proper to masonry. Another deviation of line entails almost as disastrous artistic results as the change of direction in the outline of the towers. Instead of the continuous slope of the East River Bridge from approach to centre and down again, it is here only the roadway between the towers which shows a curve, abruptly changed to a straight line outside them. And a third deviation of the same kind puts it quite out of the question that the structure can ever compete as a thing of beauty with the older bridge. This is again an abrupt change of line, the substitution of the straight backstay for the

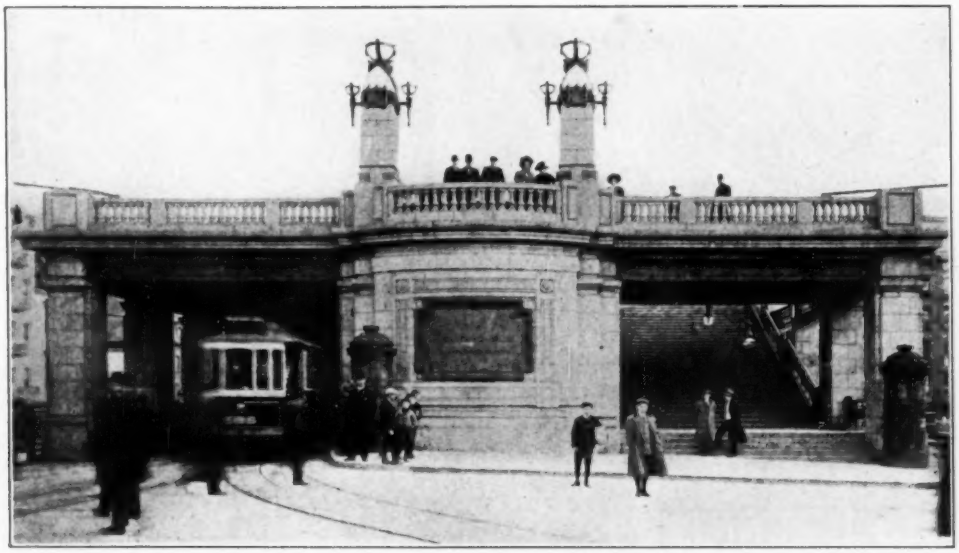


FIG. 9. ENTRANCE TO WILLIAMSBURG BRIDGE.
Palmer & Hornbostel, Architects.

half catenary as the connection of the cables with their anchorages. Scientifically accurate and competent it may be, but it is architecturally most injurious. An eminent engineer to whom I was deploring it observed that I probably did not understand the real motive of the substitution—"It saves a heap of computations." Which is all very well; but a man who is not willing to take trouble about the appearance of his work must not call himself an artist. These three unnecessary and unexplained solutions of continuity would of themselves be fatal to the artistic success of the work which they disfigured. But there is still another drawback almost equally injurious, and in this case injurious to the aspect of the suspensory structure itself, of the bridge between the towers which in almost all suspension bridges cannot help being attractive. That is the enormous depth and the insistent conspicuousness of the stiffening truss of the roadway. In the old bridge this member simply suffices to give needed emphasis to the line of the roadway, while yet it is obviously subordinate and accessory to the suspensory structure, which is "the thing." In the Williamsburg it becomes so insistent that it almost seems a question which of the constructions is auxiliary to the other, whether a huge trussed girder is only assisting a suspension bridge or is only assisted by it to the extent of a suspensory arrangement to relieve the strain at the centre. No accessories, it is evident, could make an admirable or even a presentable work of art out of a project so bedevilled in the primary conception. To invoke an architect to improve its appearance after it is done were a futile and ungrateful requisition. As Polonius has it—"Beautified is a vile phrase." It is particularly a vile phrase in bridge-designing. Doubtless it were impossible that the approaches in metal to this bridge could have the impressiveness of the approaches in masonry which we have been admiring. But it may be noted that, though a plate-girder offers a less interesting surface than a bonded stone wall, the projection of the roadway beyond the structure of the approaches themselves is far better managed here (Fig. 7), where the projections of the roadway are carried on brackets, than in the East River Bridge, where they are supported by vertical posts from the ground. More "evidences of design" in the brackets would make

FIG. 10. QUEENSBOROUGH BRIDGE FROM MANHATTAN.
Bridge Department, Engineers. Palmer & Hornbostel, Architects.

the arrangement not only presentable, but attractive. One must also praise the arrangement by which the structures of the terminal are sunk so far out of sight as to preserve the endwise view which in the old bridge is effaced, and which would be so much more valuable there than here, if one could only see it. (Fig. 8.) Moreover, these unobtrusive structures are in themselves admirably designed and appropriately detailed. (Fig. 9.)

As monuments, the two latest bridges show as distinct an advance upon the earliest as the second shows a retrogression. And the credit for this advance cannot be withheld from Mr. Lindenthal, under whose administration of the Bridge Department the Queensborough Bridge was redesigned and virtually begun, though some progress had already been made in building the supporting piers, and Manhattan Bridge re-designed also, though the engineering changes of the revised design have again been discarded in the actual structure. Mr. Lindenthal had the conviction that the common method of bridge-building, whereby the structure is designed by an engineer, and afterward, if at all, an architect invoked to give it such form and comeliness as may still be practicable, was a radically wrong method; that the "beautification" of a great structure originally designed without reference to beauty or expression was an impossible operation, too often a hopeless attempt to retrieve the irretrievable. He held that in order to secure an artistic result in these great works, of which the general form must remain the chief element of their impressiveness, and of which the general form proceeding from new applications and in new materials of mechanical principles, they must from the first be the subject of æsthetic as well as of scientific investigation. In a word, the artistic constructor must be associated with the scientific constructor at every step from the very outset of the design. Messrs. Palmer and Hornbostel were accordingly associated with the design of the Queensborough while Messrs. Carrère and Hastings stood in the same relation to the design of the Manhattan, with the results for which we have so much reason to be grateful.

The intervention of Blackwell's Island at the point indicated as the most suitable for the Queensborough Bridge made the construction much more economically feasible than it would have been had the whole width of the river, here some 3,700 feet from shore to shore, been unbroken by land. From the architectural point of view, the facility involved an awkwardness, since the western water-

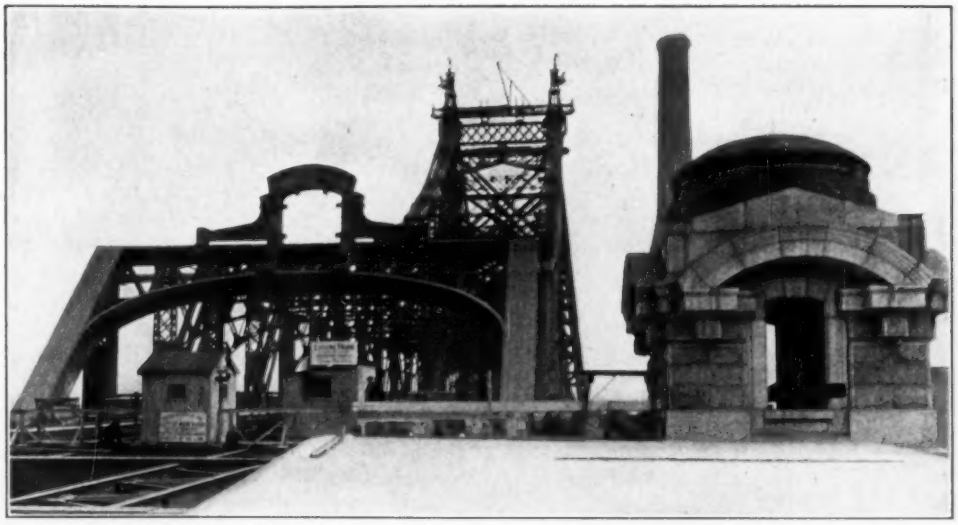


FIG. 11. MANHATTAN ENTRANCE, QUEENSBOROUGH BRIDGE.
Palmer & Hornbostel, Architects.

span is some 200 feet longer than the eastern. But the cantilever construction has here been so applied that even this marked failure of symmetry does not afflict the observer, and most observers, one imagines, would not be conscious of it, from any point of view they would be likely to take, unless it were pointed out to them. The curve of the river spans approximates that of the Mirabeau Bridge at Neuilly on the Seine, only here reversed from a "deck span" supported by the cantilevers to a "through span," depending from them; and the Pont Mirabeau has imposed itself as the most artistic of metallic bridges, both in its general form and in the rational and exquisite treatment of constructional detail in metal. In this latter respect it is far superior to the later, more conspicuous and more familiar Pont Alexandre III. by the same authors. For, while the Alexander Bridge is very impressive by its stately and decorated roadway as one passes over it, and by the boldness and grace of its arch, of a length of radius

FIG. 12. MANHATTAN APPROACH, QUEENSBOROUGH BRIDGE.
Palmer & Hornbostel, Architects.

and slightness of curvature almost or quite unprecedented, one's admiration is much diminished when he walks under it and notes such solecisms of detail as the application, at intervals which must have been determined simply by the accepted proportions of a classic column, of capitals and bases in carved marble to posts of flanged and riveted metal, which are evidently continuous below the bases and above the capitals, and with the function of which the applied ornamentation in stone has evidently and even ostentatiously nothing whatever to do. Though the lines of the Queensborough are, in fact, broken instead of curved, the effect of the bridge is that of four towers with three suspended spans, and is doubtless the best example of a cantilever of anything like equal extent, for the Mirabeau is, as a piece of construction, child's play compared with this gigantic work, of which the shortest of the three spans is probably equal to the whole extent of the French example. (Fig. 10.) Surely there is no great example of the cantilever construction on this side of the ocean which equals this in effectiveness, while the most famous example on the other, Sir Benjamin Baker's Forth Bridge, is commonly adduced as an awful example of ugliness. Considering the Queensborough, one wonders if it would not have been better, in view of the conspicuousness and the artistic success of the towers, if the arches of the masonic substructure had been omitted altogether

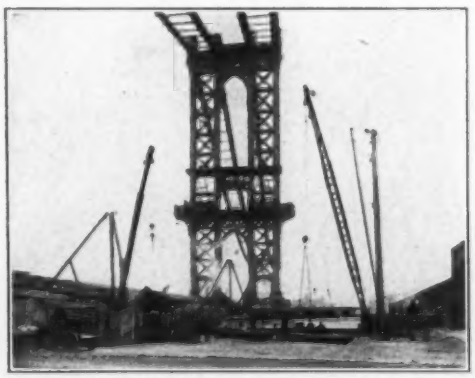


Fig. 13. Manhattan Bridge—Manhattan Tower.
Bridge Department, Engineers.
Carrère & Hastings, Architects.

Fig. 14. Side View of Manhattan Tower.
Bridge Department, Engineers.
Carrère & Hastings, Architects.

and only their stark and massive abutting piers retained to carry downward the lines of the so-called towers and prolong and emphasize the impression made by these, so that they should in effect be continuous from base to finial, instead of being interrupted, as here in effect they are, by the turning of the arches between the masonry supports. Be that as it may, one cannot help seeing and feeling that "every joint and member" of the superstructure has been considered with reference to the expression as well as to the performance of its mechanical function, while those "features" of the construction which by their dimensions are entitled to an effect of grandeur without question convey that effect. Consider, for example, that westernmost of the four metallic towers, even from the point of view of the photograph, which is by no means the most favorable point of view. What an expression of power it conveys, of power and grace, and grace, you will remember, is analyzed by Herbert Spencer into simply the expression of ease. Certainly that is an apt enough definition when, as here, it pertains to the doing of mechanical work, such as is imposed upon these erections, of which the height from base to summit nearly equals that of the towers of the suspension bridges, and would of itself make them very notable in any but the city of skyscrapers. And consider also the simplicity and effectiveness, even in its

actual and uncompleted condition, of the entrance (Fig. 11) at the extremity of the Manhattan "shore arm" of the cantilever, how much the effectiveness depends upon the simplicity, and how the simplicity enables and indeed demands a massiveness in the treatment of metal akin to the massiveness of the adjoining masonry. It were to "beat the bones of the buried," to point out how this simplicity is the summary and result of a process of simplification, and what a complicated and ineffectual network of bars it was which the associated engineer and architect of the restudy have reduced to this simple expression. Observe also that the "grade" of some three and a half per cent. is here carried in a gradual and unbroken slope, from the level of the land on either side to the central span. For architecture in the academic and conventional sense, from which the idiomatic treatment of metal is excluded, we must resort to the approaches. Even there we fail to find the academic and the conventional prevailing in the most conspicuous of the features, the arcade in masonry, interrupted only by the wider arches of the street crossing. (Fig 12.) Instead of the conventional "Florentine arches" of the earliest East River Bridge, deepest at the crown and shallowest at the impost, the form "the reverse of that dictated by mechanical considerations alone," we find that reversed form, dictated by mechanical considerations, in which the arches are deepest at the impost and shallowest at the crown. So far as I know, this is a novelty on this scale and "in this connection." But it is by no means on that account a caprice. It would in any case give, even to the spectator who did not stop to analyze it, that grateful sense of reality which a work of architecture must at least not contradict. In the present case it has the obvious practical advantage of giving the greatest amount of "head room" to a segment-headed arcade in a situation in which the maximum of height is a practical and an æsthetic desideratum. The filling of the spandrils of the stone arches with an incrustation of particolored tiling in relief is an effective novelty, and even more effective is the ceiling of the interiors of the bays made by the piers and arches with tile-vaulting of low pitch and shallow curves, a mode of interior finish which, if not quite a novelty with us, is by no means as trite as it deserves to become, and which is here carried out in a particularly interesting way. One can foresee an even more useful future function for these sheltered spaces than the warehouses of the East River Bridge fulfil, or than is fulfilled in the public market, only partially sheltered from the weather, which has accrued under the projecting roadways of the approaches to the Williamsburg. In the meantime a visit to these spaces, as yet unoccupied and hardly as yet "swept and garnished" must be of the greatest interest to any mind which is open to scientific convictions or to artistic impressions.

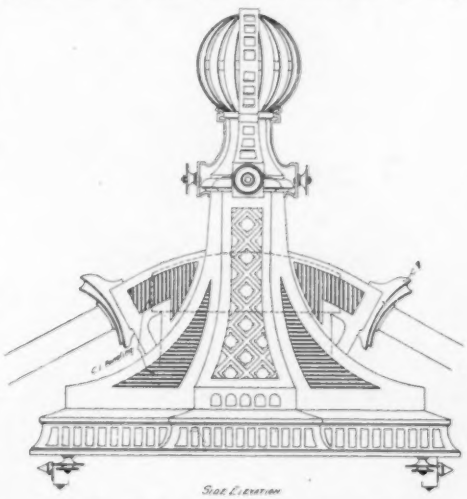


Fig. 13. Cable Holder, Manhattan Bridge.
Carrère & Hastings, Architects.

Least of all the four bridges in a condition to be judged is, of course, the fourth: (Fig. 13.)

Pendent opera interrupta minaeque
Murorum ingentes, aequataque machina coelo.

The Manhattan is absurdly and meaninglessly miscalled; it has no more to do with this island than any one of the other three. "The Wallabout" is a designation that would have local and historical significance. Most Manhattanese, one may assume, who have no occasion to cross the East River, recall the design

of the Manhattan mainly in connection with the contention among the engineers to which the redesigning of it under Commissioner Lindenthal gave rise. Far be it from an incompetent layman to revive that old controversy. But it is germane to the present purpose to point out that, whether scientifically preferable or not to the discarded and now readopted design, that of Mr. Lindenthal embodied a most impressive architectural conception. That was the conception of abolishing the "stiffening truss," which, as we have seen, is apt to become an unsightly appendage to a chain bridge, by incorporating its functions with that of the suspensory structure and leaving the roadway as a great street floor unencumbered at either side from end to end. And it is only just to acknowledge the magnanimity of the subsequent administrations of the department in recognizing the enormous architectural improvements which had been evolved, together with what they regarded as an ineligible engineering design, and in retaining these improvements, so far as the changed design admitted. This magnanimity extends to the succeeding architects who have re-studied and refined the first design for the towers instead of discarding it. It is an article of architectural faith that any construction mechanically sound is susceptible of artistic expression. It is true that even the general form and outline of the Manhattan are not yet developed. As one sees it now from the river, it does not appear, even of the great catenary curve, what it shall be, much less what the effect of it will be when its line is supplemented by that of the unbegun roadway beneath, and of the filaments which are to connect these two essential members of a suspension bridge. It is the metal work of the towers alone and the masonry of the anchorages alone that are sufficiently advanced to be judged. In these there is already abundant evidence of a more skilful and expressive and successful treatment than is to be found in any other suspension bridge anywhere. Mr. Hornbostel's design for the towers, as exhibited some years ago in a model, was universally admired. But it is clear that this has been vastly improved in the executed work. Instead of a trellis of metal panels in each of the three compartments into which the tower is divided above the roadway, this trellis is now confined to the lateral compartments, the central being opened to the top, where it is closed by an arch, with a great gain in expression, the uprights which support each its respective cable being unmistakably specialized for that function. And there is an equal increase both in power and in refinement over the original design in the spreading substructure of the tower (Fig. 14), in which the function of every part speaks with forcible and eloquent expression, and the unity in variety of the whole is so impressive that it is impossible to regret that in these masonry was discarded for metal. It is instructive to compare the section of the summit of the towers of the East River Bridge, in which such blundering and mistaken pains were taken to ignore the actual purpose of their erection, to conceal what they were, in fact, all about, with the successful pains which have been taken in the exposition and the emphasis of the offices of the cable holders and the cable saddles shown in the outline of the tops

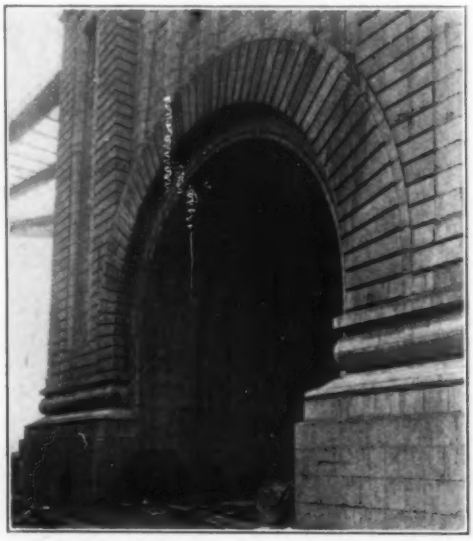


Fig. 16. Flank of Anchorage, Manhattan Bridge.
Carrère & Hastings, Architects.

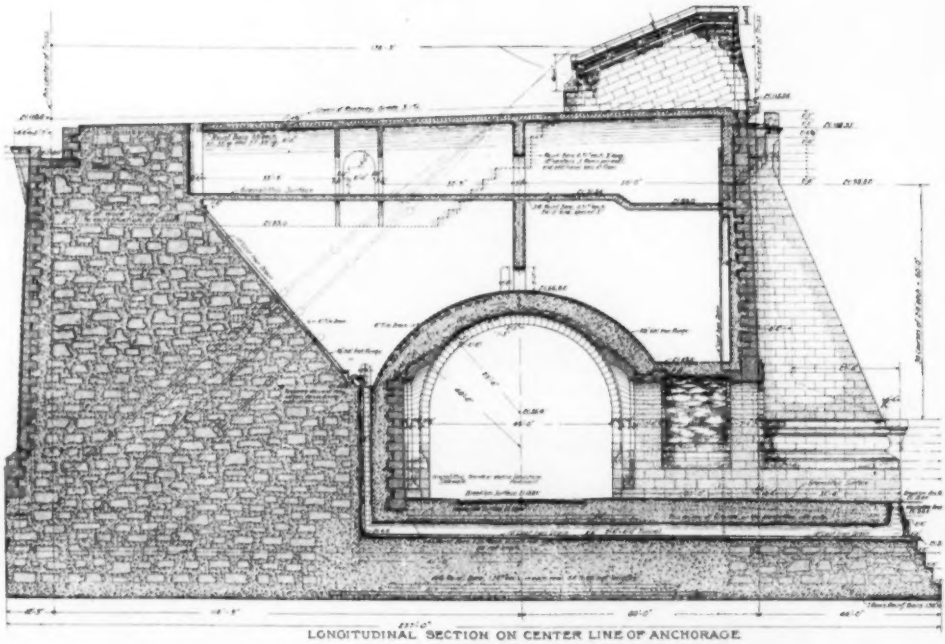


FIG. 18. SECTION OF ANCHORAGE, MANHATTAN BRIDGE.

FIG. 17. FRONT OF ANCHORAGE, MANHATTAN BRIDGE.
Carrère & Hastings, Architects.

of the towers of the Manhattan (Fig. 15).

But the masonry of the anchorages is at least equally admirable with the metal of the towers, and equally expressive (Figs. 16 and 17). The effect of massiveness in these anchorages is almost more than Roman. They wear, indeed, an aspect of Egyptian immobility, and immobility is the very purport of their erection. Where in the world can one see a more impressive effect of sheer power than in the ordered masses of this Manhattan anchorage, which so few of us have thus far taken the trouble to

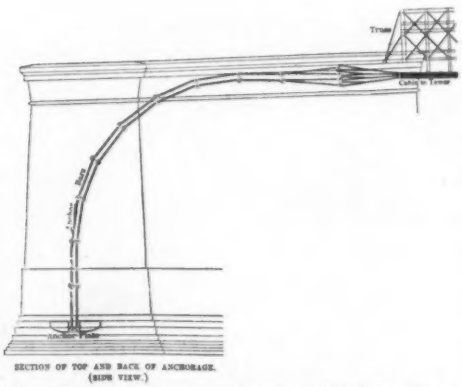


Fig. 19. Section of Anchorage, Old East River Bridge.

see at all? It is hard to say which is the more impressive view, that of the front, with its four great backward-raking buttresses, each corresponding to the great cable to restrain which is its office, or of the flank, in which the aperture destined for the passage of Cherry Street serves but to emphasize the solidity of its abutting masses. The four-foot torus which is the impost-moulding of the arch—and one wishes that it had been of a single instead of a double course of masonry—will give the scale of the monumental work which is given also by the human figure alongside. And what a scale!

Why man it doth bestride the narrow street,
Like a Colossus, and we, petty men,
Walk under its huge legs and peep about—

Egyptian mass! Egyptian immobility! "Pylons" is the only name for these huge erections, that so recall how the Egyptians "planting lasting bases, defied the crumbling touches of time and the misty vaporousness of oblivion." These anchorages give visible promise of a duration equal to that of the great temple of Ramses, or the great pyramid of Cheops. And it is as gratifying as it is exemplary to note that all this is so impressive because it is so expressive, because it is in detail, as well as in mass, a faithful and skillful following of the facts of the case. Each of the buttresses is modeled to express its special function of seizing and holding its allotted cable, which, as the section shows, it is reaching up to grasp. Even our old friend, the curved pediment, finds a meaning as the offset and drip-stone of a buttress. The contrast is as vivid and as overwhelmingly in favor of the modern instance between the section of this anchorage (Fig. 18) and that of the crude and amorphous lump of the anchorage of the old East River Bridge (Fig. 19), as between the summits of their respective towers, though the process has been in one case that of attenuation and in the other that of accumulation. There seem to have been generations of earnest and artistic workers between the crudity of the earlier and the refinement of the later of two works which, in fact, less than a single generation divides. It is a great advance. The Queensborough and the Manhattan Bridges give promise of a final and triumphant refutation of the official European criticism that "public works in America are executed without reference to art."

Montgomery Schuyler.

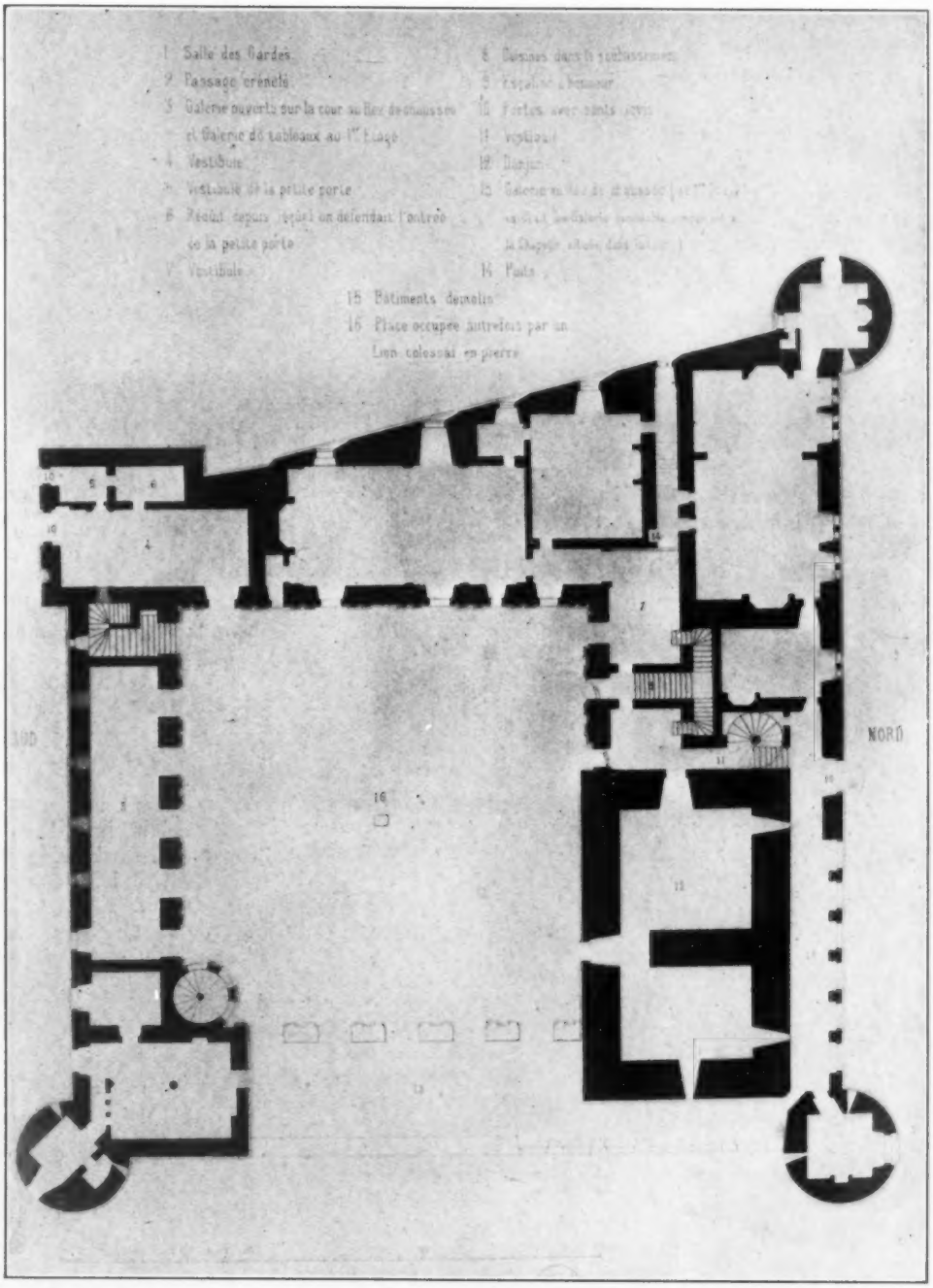
A Renaissance Château of Eastern France

The Château de Pailly

No traveller who has visited Eastern France in search of fine old chateaux can have failed to notice how very few specimens of the architecture of the Middle Ages or the Renaissance there are in that part of the country. If he were to set out from Paris in almost any other direction he would be embarrassed as regards choice, but in the Departments of the Aube and the Haute-Marne he has to be content with a castle or country house here and there and not be disappointed should it fail to come up to his expectations. The reason for this scarcity of buildings of architectural importance is not hard to find; it is a matter of French history. During the wars with the English and those of the League and the Fronde, the East of France, and especially the country around Langres, was devastated time after time. Many fine châteaux existed there in the Middle Ages, but most, if not all, were destroyed. So complete, indeed, was the destruction that the owners, in all but a few rare cases, abandoned the idea of rebuilding.

Among the mediaeval castles which were only partly destroyed during that stormy period, and which were rebuilt in the style of the Renaissance, the most remarkable is the Château de Pailly. It is situated in the commune of Longeau, near Chalindrey, at the base of the Cognelot, one of the mountains which form the range on which the fortified town of Langres is built. The hamlet and chateau of Pailly belonged in the thirteenth century to certain nobles who bore that name, and they were still in possession at the close of the fourteenth century. Whether they continued to hold them during the following century is unknown. In 1491 a Jean de Dommarien was Lord of Pailly, but as he died without issue the Bishop of Langres, whom he had recognized as his souzerain, entered into possession of the property. The new owner did not, however, hold it long, for it shortly afterwards passed into the hands of the illustrious house of Saulx. In 1530 Jean de Saulx, Lord of Orrain, was the possessor, and from him it passed to his son Gaspard, who afterwards adopted his mother's name, Tavannes. He later became Marshal de Tavannes, and one of the most famous men of his day. The present Château de Pailly was in great part built by him. Remaining in the Tavannes family until 1764, the château and estate were sold to Arnoult Rene Toussaint Heudelot de Letancourt, who in 1777 left it to his son, Abraham Pierre de Letancourt. He in turn bequeathed the property to a relative, Francois Heudelot de Pressigny, the wife of Jean Etienne Desmiers de Saint-Simon, Vicomte d'Archiac. His son, Jean Etienne Arnoulphe, Vicomte d'Archiac de Saint-Simon, became the owner in 1790, but as he fled the country at the time of the Revolution the State seized the château and sold it, in August, 1799, to M. Charles Felice, of Paris. It was again sold on May 7, 1802, to M. Francois Roulet, of Neuchatel, and once more in 1821, this time to M. Jean Francois Moreau du Breuil, who, in company with his son, M. Thomas Moreau du Breuil, began its restoration—a work which has been continued in a very intelligent manner by the present owners, M. and Madame du Breuil de Saint-Germain.

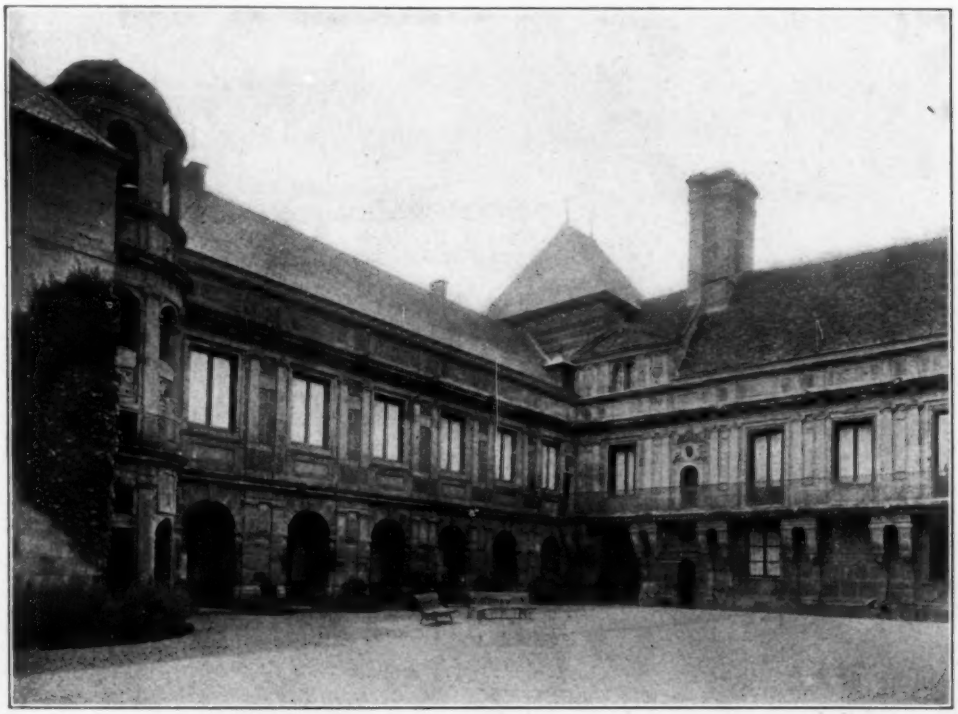
In its main lines the Château de Pailly is much as it was in the days of Marshal de Tavannes, and for that reason it is regarded by architects as one of the most remarkable of the sixteenth century châteaux of France. It formerly consisted of four wings surrounding a square courtyard. Three round towers and a pavilion were at the corners and defended the curtains, whilst a square donjon on the north side commanded the entire block of buildings. At the top of this keep were stone turrets for the sentinels who guarded the castle, which, in addition to other defences, was surrounded by a moat. The entrances, all of which were


1 Salle des Gardes
2 Passage crénelé
3 Galerie ouverte sur la cour au rez-de-chaussée
et Galerie de tableaux au 1er Etage
4 Vestibule
5 Vestibule de la petite porte
6 Réduit depuis lequel on défendait l'entrée
de la petite porte
7 Vestibule
15 Bâtiments démolis
16 Place occupée autrefois par un
Lion colossal en pierre
NORD

THE CHATEAU DE PAILLY—PLAN.

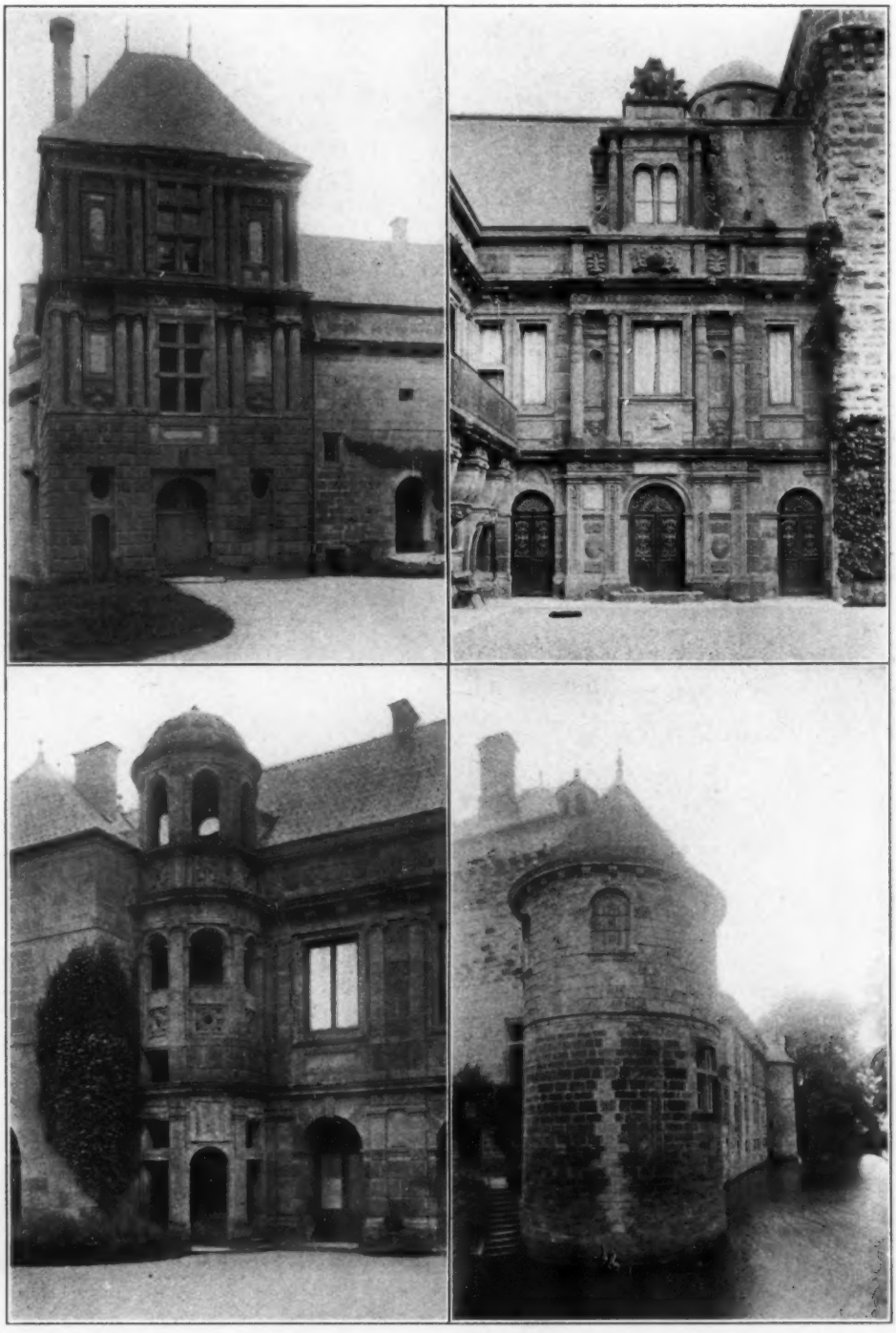
provided with drawbridges, were three in number: By way of the pavilion on the southwest, by two doors, one in the northern and the other near the southern curtain, and, finally, by an open postern in the northwest tower.

"At the period at which the Château de Pailly was built," says an eminent French archaeologist of the middle of the last century, "the influence of feudalism had much diminished. The nobles were no longer sufficiently independent to raise strongholds in opposition to the royal authority, which had gained what feudalism had lost. Moreover, the invention of artillery made the defence of castles more and more difficult, and the nobles, as a rule, were not sufficiently wealthy to build fortifications of sufficient strength to resist cannon, or, if they built them, to provide them with artillery. Consequently they had almost given up constructing fortresses. If towers were still retained, they were there more as a souvenir than as fortifications; and thus the castles of the end of the sixteenth century, whilst leaving a good deal of their miliary character, already began to have the appearance of dwelling houses. The Italian campaigns of Charles VIII, Louis XII and Francis I, during which French nobles visited the Renaissance palaces and villas of Italy, had also largely contributed to the replacement of feudal castles by less severe châteaux."



CHATEAU DE PAILLY—GENERAL VIEW OF COURTYARD.

In this respect it is interesting to compare two other châteaux of the Langres district with the Château de Pailly, Ancy-le-Franc, which was built in 1555, is very regular in its architecture, but it is without either towers or a donjon. Its moat is the only defence. The Chateau of Tanley, dating from 1559, has both moat and towers, but, with its regular façades it bears only a slight resemblance to a stronghold. Con-



VIEWS OF THE CHATEAU DE PAILLY.

Southwest pavilion dating from the Renaissance. Doorway in the courtyard.
Staircase tower in the courtyard. One of the towers and the moat.

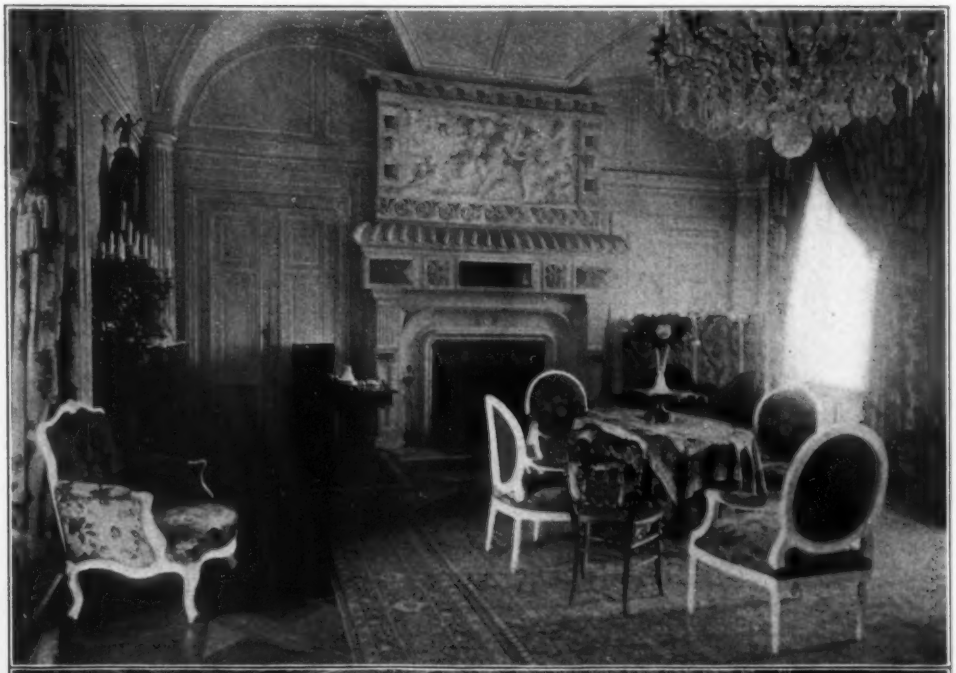
structed about the same time as these two castles, Pailly has a more military aspect. Thus, three towers and a pavilion flank its exterior walls and the keep still occupies the place it ordinarily had in French strongholds. The windows—numerous on the façade facing the courtyard—are not so common at the exterior, especially on the ground floor, and, with the exception of the southwest pavilion, which is richly ornamented with columns and carving, the exterior walls are almost plain. A cornice, resembling the machicolations of older castles, is the only ornamentation.

It must be remembered that Marshal de Tavannes was a military man. It was not natural that he should build his castle with the regularity of an Italian palace, deprived of all means of defence. He foresaw that he might find a use for stout crenalated walls, hence the embrasures in the towers, which he likewise roofed in. But what constituted the principal means of defence was a terrace with which the castle was surmounted—a terrace capable of being armed with cannon. Now, these means of defence certainly saved the château from complete ruin, for on Prince Casimir's army passing through Pailly in 1576 the village was pillaged and burnt. Twice did the Comtois and the Croations come marauding in August, 1842, and had the castle been less defended than it was they would undoubtedly have pillaged it.

But if the Castle of Pailly, taken as a whole and especially as regards its exterior, retains the air of a feudal habitation, the architecture of its courtyard and that of the beautiful southwestern pavilion belongs to the Renaissance in its richest and most delightful form. This southwest pavilion, in which, as I have said, there was the principal entrance, is built on a basis of rusticated stones, which support two floors, each ornamented with eight fluted columns. On the first floor, these are Ionic; on the second, Corinthian, and, arranged in pairs, they are separated by mouldings enframing marble panels. On the frieze of the first floor can be seen a curious leaf-like ornamentation, rather resembling a bunch of plumes, and this the architect has employed on many parts of the château. The frieze of the second floor is ornamented with modillions. This graceful façade was formerly surmounted by an attic on which stood an equestrian statue of Marshal de Tavannes.

The pavilion in the courtyard is equally remarkable. The entrance is surmounted by a marble plaque bearing a defaced inscription, and on each side are two fluted and sculptured pilasters, separated by panels of rusticated stone. Leaf ornaments appear on the frieze. The arrangement of the first floor is similar to that of the ground floor, but the pilasters are replaced by fluted columns, above the capitals of which is a finely sculptured frieze. These columns are separated by empty niches, and under the window is a partly broken bas-relief, representing a famous jump which Marshal de Tavannes once made on horseback in the Forest of Fontainebleau. The rocks of the forest are, however, replaced by what look like towers, and the Marshal is mounted on a Pegasus, which he had adopted as an emblem. Finally, a dormer-window with a pilaster and a fluted column on each side rises from an attic decorated with a medallion and sculpture. This window is surmounted by a shield encircled by the Cordon of the Order of the Saint-Esprit and bearing a lion on an azure field—the arms of the Saulz de Tavannes family. On each side of the coat of arms there were formerly three statues representing three of the seasons, whilst two vases, resting on the attic, flanked the dormer-window.

The donjon, built of rough-hewn stone, stands to the right of this pavilion, with the elegant architecture of which its imposing mass contrasts most strikingly. It has been said that this keep dates from the tenth century, but as buildings with bossages were not constructed before the introduction of artillery there is no doubt that it was raised in the fifteenth century; that is, at the time the castle was rebuilt, after an attack by the inhabitants of Langres. It



CHATEAU DE PAILLY.
The Drawing Room.
The salle dorée or ancient salle de gardes.

is the only remaining portion of the older château. Two floors of windows were made in its sides during the sixteenth century, and its walls were surmounted by a sort of attic supported by medallions resembling machiocalations. Finally, four turrets, open to the air, were placed at its corners, three for sentinels and the fourth to contain a staircase leading to the donjon's platform.

Along all the western façade facing the courtyard is a balcony supported by cansoles, fluted and ornamented with animals' heads. The windows of the first floor, resting on this balcony, are separated by pairs of pilasters with ionic capitals. Above runs an attic. The building facing the pavilion and the keep formerly contained prisons in the basement. On the ground floor is an open gallery formed of arcades separated by pilasters of the Doric order. Ionic pilasters separate the windows of the first floor, which is reached by means of a charming turret with openings. The building which closed the courtyard, in the center of which there formerly stood a stone lion, is said to have been built in the same style as this last named façade.

Like all old châteaux, the interior of Pailly contains exceedingly large rooms, extending in some cases the entire length of the wings. With one exception all the rooms are vaulted, and the huge fireplaces which were built to warm them are veritable monuments. All the ancient mantelpieces, save two, still exist.

In the room looking on to the balcony, and which is now used as a salon, the windows are separated by fluted columns, supporting the roof. At one end is a mantelpiece surmounted by a very fine bas-relief, on which, to the right, can be seen the Marshal de Tavannes on his knees, in armor, and behind him his horse, held by a woman. Minerva is presenting him with arms, whilst near her are seated two women, one preparing laurel wreaths, the other a crown. To the left two cupids are busy inscribing the soldier's exploits upon tablets. Finally, in the left hand top corner is Tavanne's emblem, "A Pegasus."

The interior of the keep consists of a large room formerly called the Salle-Dorée. Instead of being vaulted, it has a wooden ceiling supported by beams, which are ornamented with paintings. The window recesses were also covered with paintings, enframing medallions, on which were mythological subjects, one of which, representing Daphne, can still be distinguished. A similar decoration ornaments the ceilings of the windows; but there all the medallions enclose the coat of arms of the Saulx de Tavannes family, a coat of arms which is united in the case of one of the windows to that of the Tresmes family. This leads one to believe that these paintings were executed in the seventeenth century, at which time the castle belonged to Jacques de Tavannes, who married Louise Henriette, daughter of the Duc de Tresmes, Captain of the King's Guard and Lieutenant General of Champagne.

In this room should also be noted a fine mantelpiece supported by consoles, fluted and ornamented with acanthus leaves. The mantel consists of fluted pilasters on either side of the arms of Saulx de Tavannes, supported by griffins and surmounted by a helmet and a lion's head. These arms are surrounded by an ornamentation of fruit, etc., in the midst of which are two mere escutcheons, the arms of which are, however, defaced. This mantelpiece is in white stone. At the other end of the same room is another mantelpiece, which, though badly damaged, is pleasing in design. The only console it possesses was found in the park.

Between the Salle-Dorée and the drawing-room is a pretty corridor, leading to the dining-room and bedrooms of the chateau. But these are not particularly noteworthy, except from the point of view of certain pieces of furniture. In one of the bedrooms is a beautifully carved Portuguese bedstead and a seventeenth century wardrobe, Alsacian work.

In spite of many changes which were made at Pailly during the seventeenth century, the château was almost, at the end of the eighteenth century, in the same state as when Marshal de Tavannes left it. But when the Revo-

lution came things changed. About 1792 the inhabitants of the village of Heuilly-Coton, headed by a Langres notary, invaded the castle, the owner of which was absent, and as there was nobody to guard the property, as in days of old, the band of marauders wrecked everything they could lay their hands on. The furniture and hangings in the rooms were shattered and torn, the ceiling in the Salon-Dorée was much damaged, some of the columns in the salon were overthrown, the bas-relief above the door in the courtyard was defaced, the charming turret was attacked and broken, and the equestrian statue of Marshal de Tavannes was shattered to atoms. The doors and even the flooring were not spared.

CHATEAU DE PAILLY—THE CORRIDOR.

Strange is the fate which overcomes some of these ancient castles of France. After being the home of a Marshal of France, of Francois de la Baume-Montrèval, of the daughter of Comte Chabot de Charny, Grand-Ecuyer of France, of Francois Brulart, daughter of the First President of the Bourgoyne Parliament, and of Marie Athenai d' Aguesseau, sister of the celebrated Chancellor of the same name, the Château de Pailly was used for several years as a stable for the oxen of a Swiss cattle breeder. Fortunate for the still beautiful building his enterprise failed, and it passed into the hands of those who could appreciate its architecture. Following the advice of M. Pistellet de Saint-Ferjeux, an eminent archaeologist of Langres, the new owner, M. Thomas du Breuil, decided to restore the castle in the most thorough and intelligent manner possible.

Let me say a few concluding words on the subject of the architect employed by Marshal de Tavannes. His name was Nicolas Ribonnier, a native of Langres, and he bore the title of "architect to the Duchy of Bourgogne." It cannot be denied that he showed very great talent in his work. The sculpture ornamenting the castle, although in a coarse-grained stone not at all easy to work, is admirably executed; it is evidently the work of skilled artists, probably Italian workmen and the same whom Cardinal de Givry employed to make the magnificent roodloft in the Cathedral of Langres and the sculpture in the Chapel of Jean d'Amoncourt, Bishop of Poitiers, at the north end of that beautiful church.

Frederic Lees.

THE HUN MOUNDS AND THE OLD CHURCH AT UPSALA.

Contemporary Swedish Architecture*

The massive Hun mounds on the Upsala plains existed centuries before King Olaf Stotkonung of Sweden was baptised at Husaby well, a thousand years ago, and who thereafter ceased to lead the pagan festivals in Upsala's temple.

Upsala's Hungraves, those tremendous earth mounds which enclose the resting places of our ancestors, are proof of the paganish power of erection and might. They rise like mighty mountain crests burrowing the plains and like dull heavy sounds breaking through the surface from another world, they appear to us in extraordinary wave lines. Not far away there stood, as late as the 12th century, our grand pagan temple, uninjured and still in use, with massive walls of coarse blocks of felspar, covered within with plates of gold. There, surrounded by the holy graves, were worshipped the old gods and deities, Odin, Thor and Frey, until Eric the Holy put an end to the pagan practices and demolished the walls of the temple. On the site of the ancient edifice he erected the Christian church which is still standing between the graves of the Huns. As in those early days, so do still the monuments of the pagans and those of mediæval Christianity, commingle and present us with the greatest monument of ancient times. The early civilization of the peasantry which existed many centuries before the introduction of Christianity gave way slowly before the advance of the Latin race, which forced its way with Catholicism during the Middle Ages. Long after Christian churches existed in West Gutland, Sigtuna and in Gotland they were making sacrifices to their pagan gods in the temple on the plains of Upsala.

These early churches and the Upsala temple were built of stone, a material which was then not much used for building purposes. The immense forests of our land permitted the most extensive timber construction, and house and hut were generally built of rough wood. Even churches were often built of wood and the ordinary granite, limestone and sandstone, though plentiful, were rarely used.

In Gothland, however, there arose early in the Middle Ages a further developed church architecture, which is still seen in hundreds of small country churches, exhibiting peculiar Roman and Gothic forms with a curious northern tinge. This was due in part to the foreign trade of the island, to its isolation from the rest of the country and to its deposits of limestone and sandstone. Thanks to these rich deposits of easily hewn stone, the edifices exhibit a richness in detail and a variety in form rarely found in the rough structures on the Swedish mainland. There are still found peasant homes showing an ancient archi-

*Auswahl Von Schwedisher Architektur Der Gegenwart, 1908 Aktiebolaget Ljus, Stockholm; Bruno Hessling Co., New York.

tecture of stone with straw roof. Their low, wide masses, lying close to the ground like the Hun's graves, are especially interesting when compared with the forms of the grave mounds. Both churches, with their simple designs, Gothic arch roofs, granite walls often two meters thick, and fortified towers, served the double purpose of worship and defense.

FIG. 1. POST OFFICE IN STOCKHOLM.
Ferdinand Boberg, Architect.

are round, low, and seem to be part of the ground, the same being seen in some of our old round churches built of granite. The Romanesque church buildings erected in bare, outlying situations, as well as the later-erected country

These edifices, of which the Varnheimer church is an example, erected by the inhabitants under the leadership of the local monks, exhibit a more original and more rational architectural character than the Gothic cathedrals of Upsala,

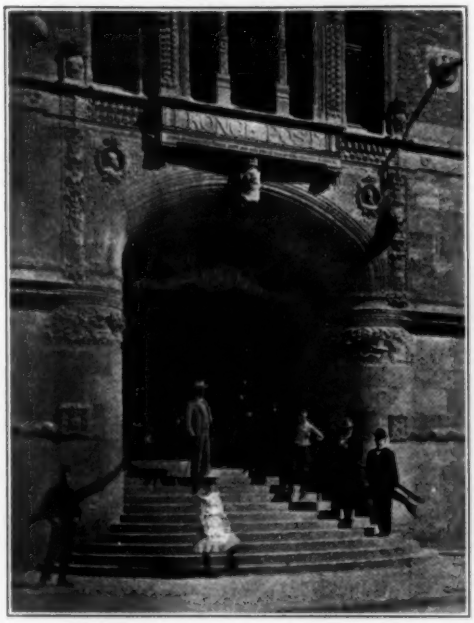


Fig. 2. Detail of Figure 1.

Skara, Linkoping, etc., which were constructed under the direction of foreign architects. At the same time brick came into more general use as building material, and during the Swedish Renaissance of the 16th century brick, granite and other hewn stone were used in the construction of residence houses of the gentry and the castles of the kings.

Under the rule of Gustavus Vasa, who consolidated the land as a kingdom, our greatest progress in architecture was made. Endowed with a perception of clearness and strength, and with a royal appreciation of the dignity of architecture, he personally conducted many building enterprises in the kingdom. The most beautiful of these is the palace at Vadstena. The original plan was like the early French castles, and of the early building the centre portion, the side towers and the moat are still extant. Its compact mass, immense proportions, curious grouping of windows, in which the demands of the Renaissance for a detailed regularity are only considered in a general way, make this a monument of true Swedish architecture. Its immense apartments, some more than ten meters wide, with their straight, heavy timber roofs, show the characteristic force of that day. The same architectural elements of mass and beauty are observable in the brick castles in Kalmar and Gripsholm. During the 17th, and especially, the 18th, centuries southern influences are clearly seen and traceable to the active intercourse of Sweden during its most glorious period with the rest of Europe. The massive and sedate forms were still in evidence, and even the rough character as seen in the palaces at Tido and Leeko; but the sedate material and construction are not seen to the same extent as formerly. The walls are built of brick or brick and stone and the façades are covered with mortar to give a handsome effect.

This tendency toward decorative effect reached its height during the 18th century and was brought about through the Italian schooling of our great Swedish artists, Tessin the Older and Tessin the Younger. The former still betrayed some of the old tendencies of the time of Vasa, as seen in his palace for Axel Oxensterna, opposite the principal church of Stockholm. Tessin the Younger,

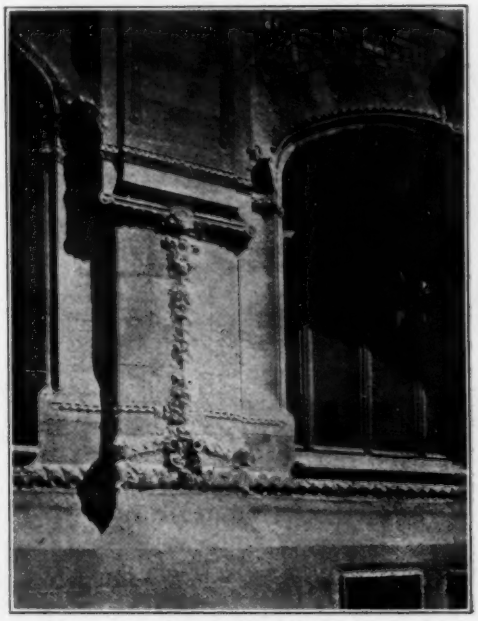


Fig. 3. Detail of Figure 1.

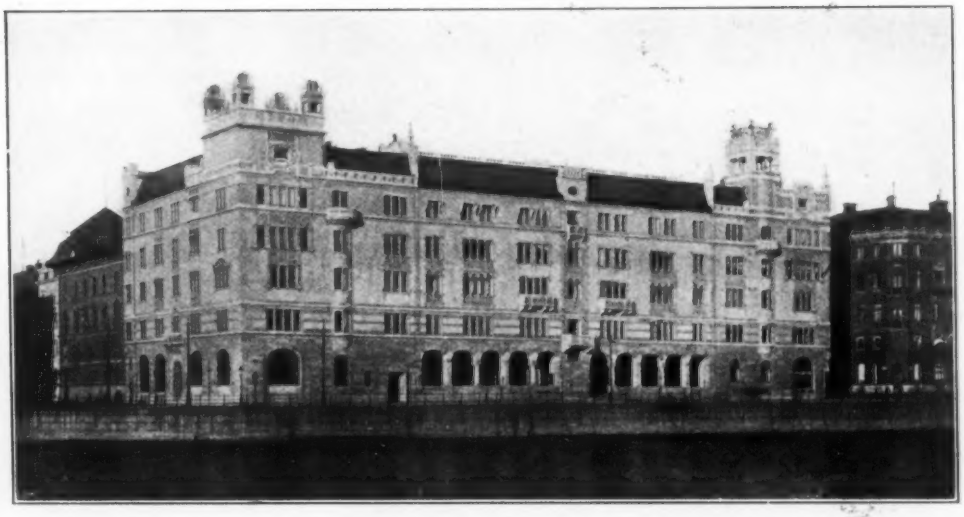


FIG. 4. THE NORDISCHE KREDITBANK IN STOCKHOLM.
Ferdinand Boberg, Architect.

Fig. 5. Detail of Figure 4.

Fig 6. Detail of Figure 4.

Fig. 7. Brick Church in Orebro Län.
Magnus Dahlander, Architect.

however, is completely under the influence of the Italian taste for decorative effects. The only germ of Swedish art shown by him is in the imposing mass. His royal palace in Stockholm, taking in an area of 30,000 square meters, with its symmetrical arrangement, its rich pilaster divisions, polished walls and fine subdivisions, was the model of Swedish architecture for over a century. His decorative tone and the Italian style which he introduced is still in use, tinged more or less by French influence. The Caroline tomb near the Riddarholms Church in Stockholm is a shining example of the art of the two Tessins, exhibiting also a trace of the Roccoco, which exerted a noticeable influence at the time of the completion of the tomb about the middle of the 18th century.

The cosmopolitan character of the 19th century brought to Sweden, perhaps in a greater degree than to other civilized nations, a mixture of historic style, from Greek to the Renaissance of the Middle Ages and the Baroc, all based rather upon academic knowledge than upon the true artistic feeling for architecture. In our country, as in many other lands, the excessive amount of foreign material has prevented the development of a uniform national type of architecture. It has been recognized during the last decade that this universal spirit in an art like architecture, which is influenced by climatic and local conditions, presents a distinct danger for the building art. For this reason the problem of the day with Swedish architecture is to develop a national architecture based upon the study of national edifices.

Ragnar Östberg.

The volume from which the foregoing is translated contains a truly remarkable and representative selection of the contemporary buildings of Sweden. To study them intelligently one should first read Mr. Östberg's review and then seek out confirmation of the influences of which

Fig. 8. Church of St. Mathew in Stockholm.
Erik Lallerstedt, Architect.

Fig. 9. Apartments in Stockholm.
Ekman & Hagström, Architects.

he speaks. In most histories of architecture not even a word of mention is to be found on the architecture of the Scandinavian lands beyond the North Sea. From even a cursory inspection of these Swedish buildings the conclusion is inevitable that the historian of the future will be guilty of palpable injustice if he fails to give them a due share of attention.

We cannot agree with Mr. Östberg that *the universal spirit in architecture presents a distinct danger for building art,* if by that universal spirit he means eclecticism. True, architecture is strongly influenced by climate and local conditions. But are there not architectural solutions which are of universal application and which are as invaluable to Scandinavia as to any other section of Europe, and to America, for that matter? One cannot, moreover, be blind to the fact that this is an eclectic age in many departments of mental activity, to which architecture forms no exception. No better application could be found of this proposition than the United States, which, like Sweden, is young in architectural development, though not, of course, so susceptible to the multitude of influences which are traceable in the contemporary buildings of that Scandinavian country. Yet, who can authoritatively assert that we are not already beginning to develop something in the direction of an American architecture? It cannot be expected that, at the present early stage of our architectural development, one

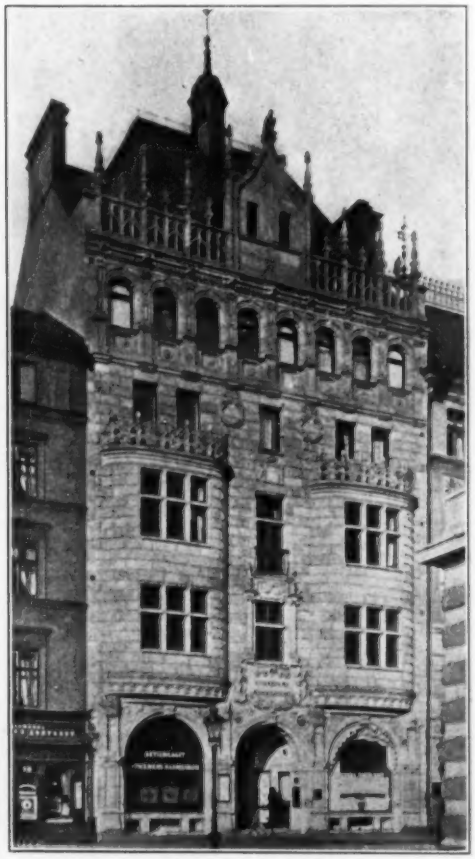


Fig. 11. Business Building in Stockholm.
Gustaf Lindgren, Architect.

will be able to designate any one building as typifying the national style. To get tangible evidence of such a manifestation of building which has come to be called *style* requires of him who would find it a study of many examples in widely scattered sections. As he passes along he will gradually and unconsciously pick up here and there fragmentary impressions which will finally total up into a definite conclusion showing him whither our ideas in the art of building are leading us. The expression, an epoch-making building, is so often used to denote a structure which precisely typifies a given style and which is made to appear the signal that the style has suddenly been created from apparently no basis. History is sufficient testimony that in the art of building the development of a marked change from the prevailing form is of the slowest of processes. Little by little the prevailing tendencies of the time lead the art in one direction or another, until finally the cumulative results of years of growth begin to crystallize and combine in the hands of the conscientious artist, who thus becomes, to outward appearances, and perhaps quite unconsciously, the creator of a new style of architecture.

In the buildings which are published with Mr. Östberg's text, and some of which we reproduce herewith, are noticeable certain peculiarities not to be found in the countries whose architectural forms they imitate. To state these peculiarities definitely it would be necessary to make an exhaustive study of Swedish buildings from every possible standpoint. It would be necessary to inform oneself precisely of the conditions under which they were built, the nature of the materials entering their construction and the character of the labor available, for which the opportunity does not offer.

FIG. 10. PARLIAMENT BUILDINGS, STOCKHOLM.
Aron Johansson, Architect.

Attention may, however, be called to the fact that the northern countries are rich in excellent building materials; the timber supply has been and still is so plentiful and so good that most of the buildings of the peninsula for centuries were of timber construction, as the author

points out in the foregoing, yet stone was to be had in unlimited quantities and of excellent quality. The financial condition of the country did not, however, warrant the expenditure of money to secure work and employ stone in buildings until modern times. But after the employment of the more permanent building material there followed the use of brick and tile and ironwork, and finally of all the other materials which are used elsewhere in permanent structures.

It is natural that the Swedes, with their inexperience in the use of these materials, should adapt them to their borrowed architectural forms in ways which most closely resemble those of the old wooden architecture of their churches and thatched dwelling houses. The minute scale of much of their ornament clearly reveals its origin from wood carving. In some instances a little experience in the art of stone carving has enabled them to produce some splendid pieces of ornamental design, while in other instances their genius for intricate ornament has led them to imitate, in their own way, the extravagances of the Roccoco. The decorative use of brick they seem to delight in, and their expertness in the use of wood is admirably shown in their treatment of interiors, which betray the Swedish love of ornament in their richly decorated plaster ceilings.

To point out specifically the more marked characteristics as shown in our illustrations, we select as a fairly representative instance of the use of brick and stone the Post Office in Stockholm (Fig. 1). in which the heavy material is made to serve as the border of the composition, the brick filling in the field. The architecture suggests, if any direct influence, that of the Modern Rhennish, but even such a statement must seem rather far-fetched in view of the novelty of handling the materials in the façade. Figures 2 and 3, which are details of Fig. 1, will serve to illustrate the minute character of the ornament, which betrays its imitation from wooden forms. Over the arched entrance in Fig. 2 is to be seen, though the illustration is not very clear, an instance of the Roccoco extravagance, which might be done with a saving grace in wood, but hardly in stone. On the whole, the modeling of the ornament is brilliant and its distribution good.

Figure 4 shows some influence of the Early English Renaissance in its general box-like appearance, caused by shallow window reveals, and in its fenestration, though on closer inspection (Figs. 5 and 6) one fails to find anything English about it. In Fig. 5 the intricacy and beauty of the ornament is especially to be noted.

Scandinavian architecture, when not too strongly influenced by southern tradition, is essentially picturesque, as witness, for example, the little parish churches shown in Figs. 7 and 8, or the pair of apartment houses in Fig. 9. Here we have modern Swedish architecture at its best, simple and unaffected, pretending to no virtues which it does not possess. If one carried the inspection of Swedish architecture no further, how high would be our estimate of it. But the impartial reviewer is not permitted to blink the other side of the story, to which our next illustration (Fig. 10) offers a fitting introduction, the Parliament Buildings in Stockholm, in a heavy version of its already heavy prototype, the German Renaissance, for which it might be readily mistaken. In fact, there is a reminiscence, though just where it would be hard to say, in this building, which could render it liable to be mistaken for the Berlin Parliament.

An interesting composition, though not so admirable in its details, is the façade of the commercial building shown in Fig. 11. It is difficult to undertand how a designer could make such a promising start at a design and complete it in so ineffectual a manner. Taken in its bare elements, the composition, one must admit, shows skill in the grouping of the windows and the placing of the horizontal moulding-bands, but in the treatment of these features there is nothing but disappointment. Note, for instance, the scale of the ornament on the balustrades of the bow-windows, and then

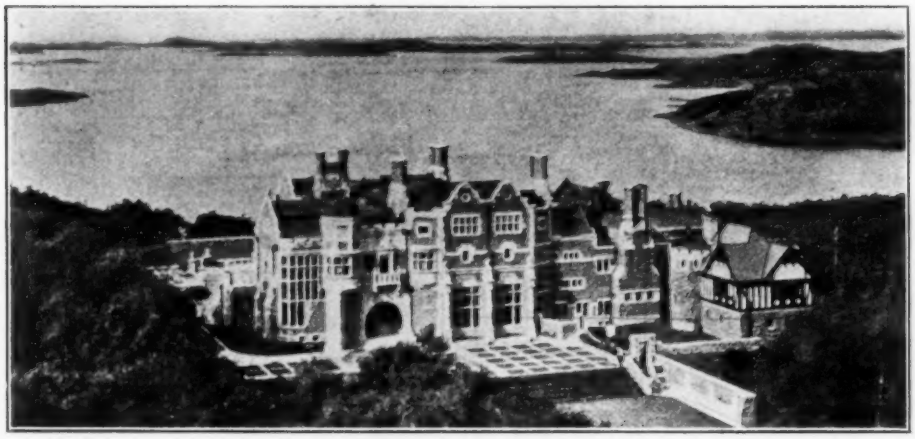


FIG. 12. TJOLEHOLMER CASTLE.

compare it with the minute scale of the ornamental roof balustrade which is so much further above the eye.

A typical example of a Swedish country estate is to be seen in our next illustration (Figs. 12, 13), which clearly betrays its English origin, not alone in its architectural features, but also in its rambling plan. A characteristic interior is the dining-room of this same castle (Fig. 14), which shows the Swedish facility in the use of carved wood and the application of the forms of wood ornament to plaster decoration.—Editor.

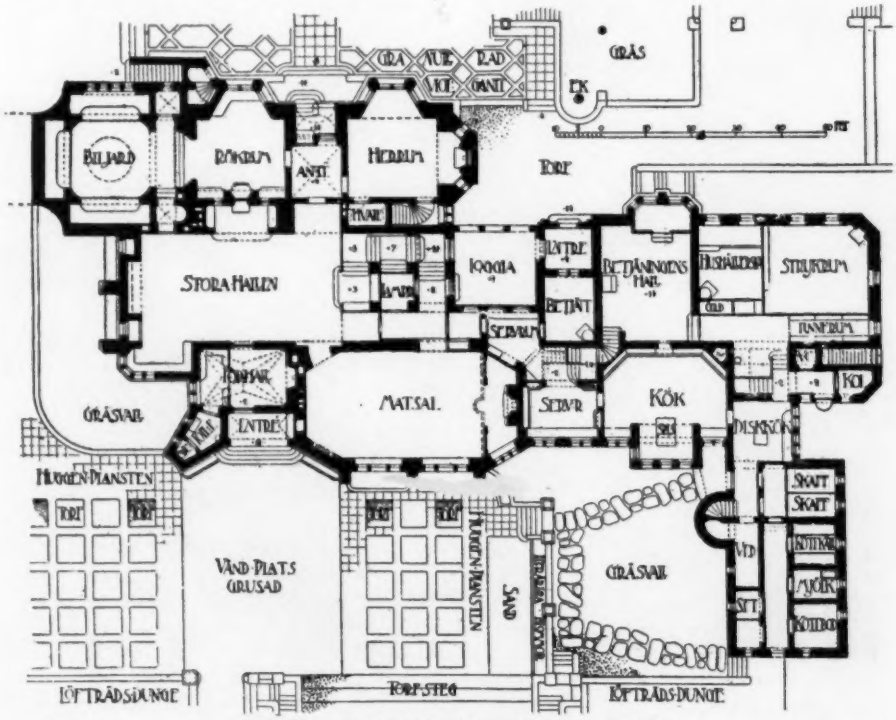


FIG. 13. TJOLEHOLMER CASTLE—PLAN.
Lars Wahlman, Architect.

FIG. 14. TJOLEHOLMER CASTLE—DINING ROOM.

The Architect in History

II.

Roman Architects—Part I.

A far more complex condition of architects and architecture prevailed under Roman rule than in Greek days, for there were now two currents and two ideals—the Italian and the Greek. In architecture, as in law and politics, Rome had a comprehensive and practical scheme to which she held most tenaciously, even forcing into its groove as far as possible the Greek talent of which she made use. She made her art subservient to her unifying programme of life and of social propaganda, without allowing free scope to the old Hellenic particularism. Creature comforts and amusements were lavished on the people to make them forget the loss of liberty; and architecture was given a leading part in the programme, which involved baths, amphitheatres, circuses, theatres, colonnades, basilicas.

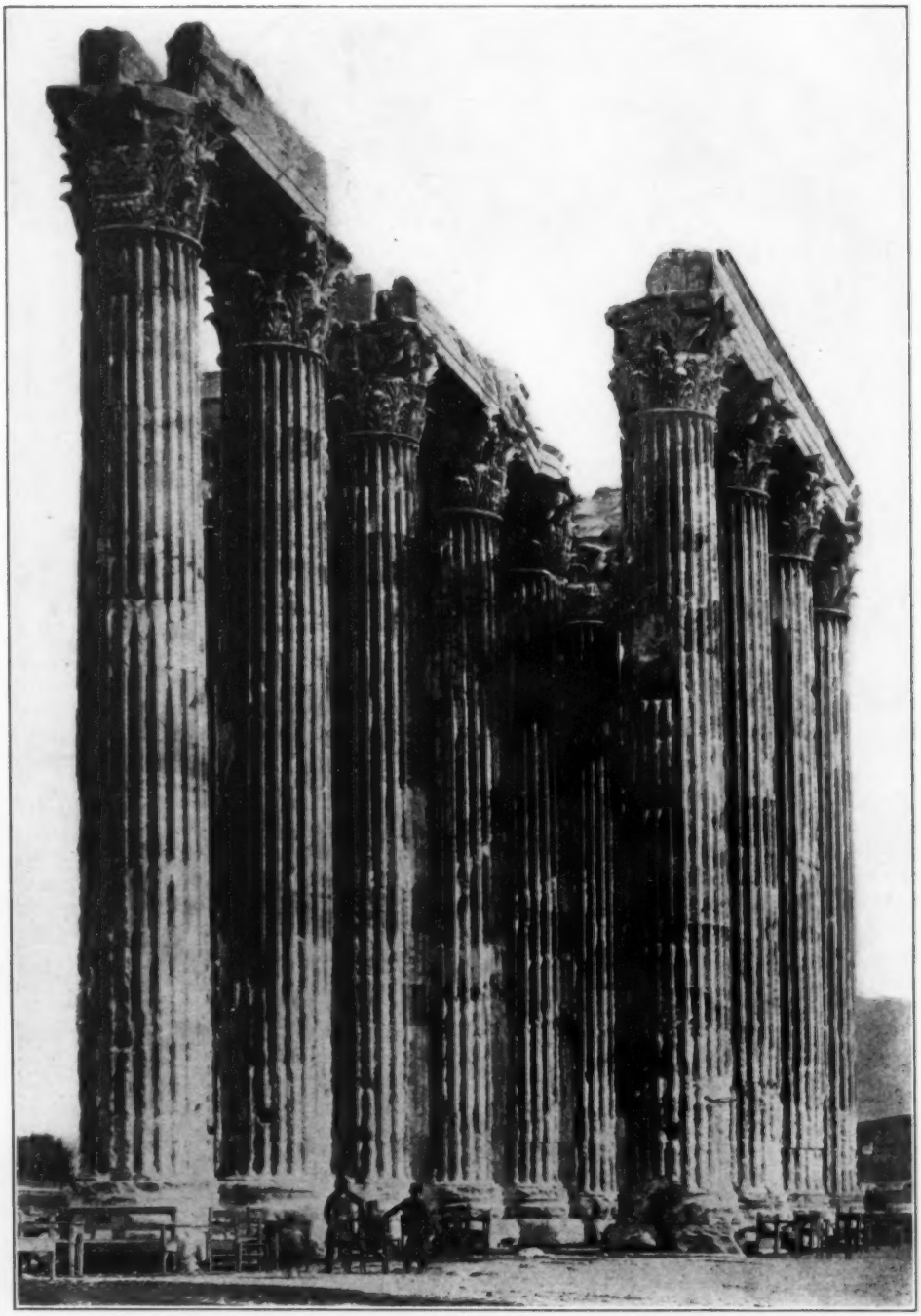
The spacious interiors required in the orthodox Roman type of some of these classes of structures, especially the imperial thermae and basilicas, brought architects face to face with problems that had never arisen before and which they managed to solve along lines of mingled boldness and common sense, showing how plastic Greek architectural genius was even in its period of subjection to Rome. Nor was this the only important difference. The interiors were not only on a far larger scale; there was a more elaborate co-ordination of structural units. The imperial thermae in Rome, the villa of Hadrian at Tivoli are architectural worlds—microcosms of immense possibilities. The new cities that Rome founded throughout the world often arose mushroom like, according to a pre-ordained plan—something only seldom seen in Greek times and then mainly in the last days, after Alexander the Great.

A personal difference that is at first confusing is due to the fact that among Roman architects social distinctions did not imply what they had among the Greeks in regard to artistic ability and education. While in Greece all prominent architects were free citizens, a Roman architect who was a free citizen might be ignorant, narrow and inartistic, compared with a slave-architect or a freedman (*libertus*) who was socially a pariah; usually the reason for the superiority of such social inferiors was that they were Greeks.

It is but too true that under the influence of the Roman practical spirit architects lost much of the love of plastic and linear refinements and the aesthetic delight in solving delicate questions of proportion. It is a matter of doubt whether this was compensated by the greater opportunity for composition on a grand scale afforded by the colossal civil structures of the empire. The effect was to wean the architect from the study of optics and perspective and from the higher and theoretical mathematics; to make him more of an engineer and builder; less of an aesthetician. He lost the Greek perception for beauty of line and surface.

Perhaps the architect had as broad a culture as before but it was partly of a different sort, with a preponderance of practical elements such as mechanics and sanitation. As a useful art, Cicero classes it by the side of medicine.

The Roman architect was, consequently, not a writer or theorizer. He had no views, no aesthetic canons; gave no literary explanation of his masterpieces as the Greeks had done. It was only at the very threshold of Roman art in the early part of the reign of Augustus that Vitruvius seems to form an exception, in his classic handbook of architecture. But Vitruvius was really less representative of Roman than of Greek ideas and summed up like an



TEMPLE OF JUPITER OLYMPIUS AT ATHENS, BY ROMAN ARCHITECTS.

encyclopaedist the period just then closing rather than ushered in a new one. He knew little or nothing of the possibilities of concrete, the basis of so much Roman imperial construction, nor of the dome and vault as the basis of Roman interiors, nor of the thermae in which the new ideas of composition was to be most successfully embodied.

In connection with this Greco-Roman amalgamation, while it is true that the influence of Greek temple architecture on Rome during the formative period of the last two centuries of the Republic was commanding, it not only did not drive out Etruscan traditions (note the persistence of the plan *in antis*), but was in turn reacted upon. While Greek architects invaded Rome, the fresh and lively Roman genius was grasping and adapting the precepts of their masters so quickly that Roman architects were being called to Greece. While the Greek Hermodorus of Salamis built the temple of Jupiter Stator in Rome, the Roman Cossutius finished for Antiochus the Great the colossal temple of Jupiter Olympius at Athens, and the Romans C. and M. Stallius rebuilt the Odeum at Athens for Ariobarzanes.

At the close of this Republican stage Vitruvius mentions, as sources of his manual, *thirty-six* Greek writers on architecture and its kindred subjects, and contrasts this abundance with the scarcity of Roman architectural writers, of whom he can enumerate but three. He says: "From the writings of these (thirty-six Greeks) I have gathered what seemed to me useful, especially as I have observed that on this subject the Greeks have published much and our own countrymen very little." After mentioning the writings of these three Romans —Fuffitius, Varro and Publius Septimius—he adds: "Beside these I do not recollect any one who up to this time has written anything, though we have formerly produced great architects and such as were well qualified to write with elegance." Nor was later Roman literature more prolific, as not a trace has remained of any work beside that of Vitruvius.

Then follows a passage in which Vitruvius deplores the inaccurate estimates of architects in connection, particularly, with work done for private owners, undeterred as they were by the fear of any punitive law like that of Ephesus, a law which was explained in my paper on Greek architects: "Would to God that such a law existed among the Roman people with regard to their public, but also to their private buildings, for then the blunderers could not commit their depredations with impunity, and those most skillful in the intricacies of the art would follow the profession. Proprietors would not be led into ruinous expense and architects, through fear of punishment, would be more careful in their estimates."

Already in the times of Cicero and Augustus it had become the custom for wealthy Romans of taste to not only take an active part in overseeing, as Cicero did, the details of the work, but to be their own architects, and deal directly with their contractors. Vitruvius, as we see, thinks this due to the fact that there was no Roman law to make the architect financially responsible when the estimate he had given as to the cost of a house was far exceeded in the building.

Vitruvius does not spare his fellow architects, and, unlike his contemporary, Cicero, refers to the great number of "cheeky" ignoramuses who sullied the profession. He shows, perhaps, a trace of personal disappointment and disillusion when he says that it takes more than scientific knowledge to bring success, and that money, influential connections or a good address are necessary for an architect to be successful and to have the chance to show his ability. He confesses to his own lack of personal attractiveness—"nature has denied me ample stature, my face is wrinkled, and sickness has impaired my constitution." He adds that he did not enter the profession to make money and would think it undignified to run after clients as the majority do, to drum up trade. "No wonder," he says, "that I am so little known, but when this book is published I hope I shall obtain fame with posterity."

In another place he says, speaking evidently at first of the Greeks and early Romans: "The ancients entrusted their works to those architects only who were of good family and well educated, thinking it better to trust the modest than the bold and arrogant man. These artists instructed only their own children or relations, with due regard to their honorable character, so that property might be safely committed to their charge. When, therefore, I see this noble science in the hands of the unlearned and unskillful, ignorant not only of architecture but of everything relating to buildings, I cannot blame proprietors who, relying on their own intelligence, are their own architects."

It was probably the invasion of the profession in his own time by numerous freedmen and slaves that largely caused this bitterness of Vitruvius, himself a Roman citizen of good family and wide culture, and naturally scornful of men so far below him in position. Another reason may be that he belonged to the school that was then dying out, the exclusive school of the Greek architrave and the flat roof; still another, that so many persons who were not architects entered into the building business as a speculation.

So much has been here said about Vitruvius and so pronounced was his influence even in the early Middle Ages and especially during the entire Renaissance that I shall add a synopsis of his treatise. It still remains the principal basis for our scientific study of the classic styles and shows what sort of handbook was available for Roman architects. We must imagine it to have been accompanied by illustrative drawings. Vitruvius dedicated his book to an Emperor whom he does not name, but who can only be Augustus, and wrote it in his old age. The general opinion is that he was a military engineer and architect under Julius Caesar and Augustus and built under the latter a basilica at Fano. He leads the series of Roman architects known by name to have been in the employ of the State and especially of the Emperors, a class of architects who were given ever increasing opportunities.

Imperial Architects.—The greater of these opportunities came in Rome itself mostly in consequence of its periodical great fires. It is true that Roman authors do not specify the architects who were employed by Augustus and Agrippa to turn Rome from a brick into a marble city, but we know the names of several architects who might have done this. There was Valerius of Ostia, who covered a theatre in Rome for Agrippa; Vitruvius himself, and probably also a pupil of his, Vitruvius Cerdo, who signed the Colony arch at Verona; Artorius Primus, who built the large theatre at Pompeii and Numisius, who constructed that of Herculaneum; Postumius Pollio, author of the forum and temple at Terracina, and his pupil, Cocceius Auctus, who built the "temple" at Pozzuoli. No later reign furnishes the names of so many architects.

But, after all, the aspect of the city was not affected so radically by the works of Augustus, exquisite and numerous as they were, as it was by Nero after the great fire of 64 A. D.; and we are so fortunate as to have preserved to us by Tacitus the names of the two architects and engineers, Severus and Celer, to whom Nero entrusted the spending of the hundreds of millions he must have devoted to the work of reconstruction.

The city rose again, according to a careful plan, with more regular and broader streets; long lines of porticoes and great squares forming a monumental composition in which the private architecture was so much better in quality as not to make the public structures seem like oases in a wilderness, as in old Rome, but parts of a harmonious whole. The height of the new houses was limited to sixty feet, and in front of the lines of private mansions the Emperor built porticoes at his own expense. Inner courts were required in the house-plans and wood was forbidden in walls. Division walls were to be of stone from the quarries of Gabii or Alba.

These plans of Severus and Celer, who seem to have been given carte blanche, are characterized by Tacitus as exceedingly clever and daring, and as changing the face of nature. This was certainly true of their masterpiece, the Golden House of Nero, the colossal palace with its park which occupied about a square mile in the heart of the city, covering nearly the entire Esquiline Hill.

In Lanciani's opinion there still remains part of the marble mausoleum of one of these architects, Celer. It stands in the garden of S. Agnese outside the walls, and its epitaph reads:

CELERI. NERONIS. AVGVSTI.
L(iberto).A(rchitect)O.

The next great fire in Rome was only sixteen years later, in 80 A. D., under Titus, and it was Domitian by whom the work of reconstruction was planned though not completed.

From Martial, the poet-satyrist, we learn that Domitian's chief architect was Rabirius, who probably not only built Domitian's palace on the Palatine but had general charge of the work throughout the city. Trajan completed a number of Domitian's undertakings, such as the Circus Maximus and the Thermae of Trajan. Early in his reign he placed the architect and engineer Apollodorus of Damascus in charge of his public works. He probably completed the extinction of that pet antipathy of the Romans, the Golden House of Nero, which had usurped so much of the city, by adding above its ruins imperial Baths of Trajan next to those of Titus, facing the Colosseum.

It is to Apollodorus, therefore, that we owe the crowning glory of reconstructed Rome, and one of the architectural wonders of the world, the Forum of Trajan, with its group of colossal structures, and apparently also other works of this time in Rome and Italy, such as the ports and arches and palaces at Ostia, Civitavecchia, Ancona, Beneventum and many more. Even during the early part of the reign of Hadrian, Trajan's successor, Apollodorus seems to have been supreme, but he fell into imperial disfavor by criticising the drawings Hadrian himself had made, for his new temple of Venus and Rome, and was superseded by other men, such as Decrianus, who, if we may judge from the historian Spartian, was Hadrian's favorite.

Such stray notices in Roman writers, desultory as they are, show that there was no hesitation in the public mind about giving leading architects due credit. Certainly no architects in history had greater opportunities to show their genius than those who were backed by the unlimited imperial treasury, for they seem to have been given a freer hand than in Greece. Cities were remodeled or built anew throughout the world, even the great capitals, such as Antioch. The late Greek or Alexandrian scheme was married to the Roman in these works, and imperial architects were usually recruited in Hellenic lands, as Trajan himself later testified. There were also architects of lesser degree who were regular officials of the imperial household, freedmen and slaves, who had charge of the ever-increasing mass of imperial buildings.

After severe earthquakes, such as those which ruined some of the largest Eastern cities—Antioch, Nicomedia, Nicaea and many more, especially in the time of Trajan and Hadrian, the imperial treasury was opened wide for the work of reconstruction. Provincial governors, such as Pliny the Younger under Trajan, were given authority to call in imperial engineers and architects who were placed in charge of the public works.

CITY ARCHITECTS.—Next in importance to the imperial architects were the official city architects. The custom that had prevailed, especially in late Greek times, among the cities of Asia Minor, such as Rhodes, Cyzicus and Ephesus, of electing a city architect, responsible for all city buildings, old and new, appears to have survived there under the Empire. For example, in the time of Marcus Aurelius, Zeno, son of Theodorus, was not only the architect of the theatre of Aspendos, but had charge

of the other public works of the city. Fortunately, this theatre is one of the best preserved in the world, and it requires but little imagination to refurnish and repeople it. In the illustrations given here there is nothing fantastic.

A little later, between 220 and 240 A.D., the architect, Aurelius Antoninus, held a similar position at Tanaïs, on the Bosphorus, where he rebuilt the walls, gates, forum and other public buildings, and was recorded publicly as their author in several monumental inscriptions.

ARCHITECTS' SIGNATURES. — It was natural that architects should hardly have been allowed to sign their works. Pliny says that they were expressly prohibited from doing so. This was a prohibition that may have been an inheritance from the Greeks, who attached their names only to the buildings of which they were the donors as well as the architects. But with the Romans, the prohibition was neither absolute nor universal, and gradually died out.

Pliny cites as an instance of the tricks to which architects had recourse to evade the prohibition, the case of Batrachus and Saurus, who, disappointed at not being allowed to inscribe their names even on a part of the Portico of Octavia, in Rome, which they had built at their own expense, did so practically by carving a frog and a lizard on the capitals, animals that were emblematic of their names.

Roman law is certainly very clear on this point. In Justinian's Digest is a statement of the famous early jurisconsult Macer: "It is not permissible to inscribe on a public building the names of any other person except that of the Emperor or of the person at whose expense the building is erected."

Sometimes the architect succeeded in inscribing his name by copying this Greek subterfuge and devoting some of his honorarium to building part of the structure at his own expense so as to have a place where he could legally place his signature. We may imagine this to have been the case with C. Julius Lacer, who built the superb high bridge viaduct of Alcantara, over the Tagus in Spain with funds contributed by several towns of Lusitania. The little temple on the bridge, dedicated to Trajan, was built, as the inscription informs us, at the expense of the architect, who was able, therefore, to have himself praised in flowing verse as author of the entire structure and in the time-worn rôle of overcoming nature by art.

But signatures of architects are not uncommon even on works to which they contributed nothing but their genius. This was especially the case at the beginning, under Augustus, before Roman law had become so thoroughly organized and consistent. Some of these works are particularly interesting. For example, one of the most charming groups of buildings of the Augustan age in a provincial town is that of the forum of Terracina, not far south of Rome. The temple of Jupiter, now the cathedral, was its "Capitolium," and still preserves a considerable part of the rich marble facing of its cella—a most unusual good fortune. Where the Via Appia skirted this forum it was spanned by a memorial arch, and the open square was surrounded by porticoes and an imperial shrine. Part of the pavement of the square still remains, and in this original place the architect of the whole scheme set his name in large letters:

C. POSTVMIVS, C. F.
POLLIO
ARCHITECTVS.

This architect was, of course, not a freedman or slave, but a citizen. But among his pupils was his freedman, L. Cocceius Auctus, whom I have mentioned as a practising architect at Puteoli (Pozzuoli), where he left his signature. In fact, in the time of Augustus it was not unusual for freedmen to be allowed to sign their works. The L. Vitruvius Cerdo, whose signature was extremely prominent under the arcade of the colonial arch of the Gavii at Verona, was probably a freedman of the famous architectural writer Vitruvius. Another freedman, Artorius Primus, was, at about this time, the author of the larger theatre at Pompeii, where his signature reads:

M. ARTORIVS M. L. PRIMUS
ARCHITECTUS.

ARCHITECTS AND CLIENTS. DRAWINGS.—The relations of architects to their private clients must have been both pleasanter and more lucrative than they had been among the Greeks, owing to the far greater luxury prevalent among the wealthy Romans.

Aulus Gellius, who flourished under the early Antonine emperors, has an illuminating anecdote in his *Attic Evenings:* "I remember going once," he says, "with Julius Celsinus to visit Cornelius Fronto, who was laid up from trouble with his feet. When we entered we found him holding a sort of Greek symposium, surrounded by many men noted for learning, family or fortune. A number of architects were present, who were called in with a view to the erection of some new baths, and they were showing drawings of various kinds of baths depicted on parchment. He selected from among these one that seemed the best in plan and appearance, and asked what it would cost to build, everything included. And when the architect replied that he thought a good three hundred thousand sestercia would be necessary, one of Fronto's friends remarked, "And fifty thousand to boot' (c., $15,000)."

Among the few letters addressed by a Roman gentleman to his architect is one by the younger Pliny, which goes to show the confidence he felt in this freedman, for he attaches no conditions to the commission he gives him. "I intend," he writes to this Mustius, "to enlarge and beautify the temple of Ceres, which stands on my estate. It is indeed a very ancient structure, and though extremely small, is much frequented on a certain anniversary. On September 13 great numbers of people from all the countryside assemble here, at which time many affairs are transacted and many vows paid and offered; but there is no shelter at hand for them, either from sun or rain. * * * I shall perform an act both of piety and munificence if, at the same time that I build a beautiful temple, I add to it a spacious portico * * * for the use of the people. I beg, therefore, that you should purchase for me four marble columns of whatever kind you think proper, as well as a quantity of marble for laying the floor and encrusting the walls. You must also either buy a statue of the goddess or get one made, for age has maimed in some parts the ancient one of wood which stands there at present.

"With respect to the portico, I do not think of anything you can send me that will be serviceable, unless you will sketch me out a plan suitable to the situation of the place. It is not practicable to build it around the temple [like a four-sided court], because the latter is closely flanked on one side by the river * * * and on the other by the highway. But beyond this road lies a very large meadow, in which the portico may be conveniently enough placed, opposite the temple; unless you, who know so well how to conquer the inconveniences of nature by art, can hit upon some better plan."

NATIONALITY AND ORGANIZATION.—The majority of architects under the Empire were men of Greek blood. This is not a mere inference from the fact that the private architects of men like Cicero bear Greek names, but because even much later we find the Emperor Trajan not only placing a Greek from the Orient, Apollodorus of Damascus, in charge of his building enterprises, but plainly writing to Pliny the younger, then imperial governor in Asia Minor, that he had better get a Greek architect for his work in Bithynia because he himself got most of his architects from Greece.

This ubiquity of the Greeks partly explains the similarity of so much Roman work in countries so far apart; it also explains the rapidity with which architecture decayed in Italy when imperial patronage was once transferred eastward, as there was so little local Italian talent. It was Antioch, Constantinople and other cities of the East and of Asia Minor that drew the floating crowds of Greeks, because the greatest building operations were carried on in this part of the Roman world after the beginning of the third century.

THE ARMY ARCHITECTS.—Another of the unusual and unifying features of the situation was the relation of the Roman army to architecture. In the outlying provinces, which possessed large permanent garrisons, requiring regular employment in times of peace, such as north Africa, inland Syria, and the regions of the Rhine and the Danube, the new cities as well as the permanent camps and the works of engineering, were built by the army. Architects, as well as engineers, were attached to each legion, which always comprised a certain number of stonecutters, bricklayers, painters, masons and carpenters, so that every legion possessed the elements of a complete corps of builders and decorators and needed no outside help. The military colonies and camps which sprang up in these provinces might not, therefore, be in the least influenced by local art; the legions were, like the mediæval monks, international art agents. Such work was anonymous, and from its very nature lacked the finish and ornamentation of secular work.

The activity of the army in building operations was by no means confined to the actual construction of works controlled by the military authorities. Not only were the soldiers used in quarrying operations, in the manufacture of bricks and other preliminaries, but the proconsuls, legates and other military authorities were authorized to place the soldiery at the service of the curators of public works. In such cases the province for whose benefit the military worked was expected to provide for them at its own cost. The only limit to this use of the legions was the prohibition to use them for private undertakings. Some of the best preserved Roman cities, like Aosta, in the Alps, and Thimgad (Thamugadi); in north Africa, were the work of the army.

More than this, a semi-civil, semi-military scheme was initiated by Hadrian, which explains the wonderful mushroom growth of newly built and renovated cities under him and the succeeding Antonines. He organized a train of architects, engineers, decorators, sculptors, stonecutters and carpenters, belonging to all branches of the building trades. The men were grouped and managed in military fashion, divided into squads under regular bosses. Of course, this mode of organization applied to the mass of workmen, not to the chief architects and engineers. The object was to have a large body of men always in the Emperor's train as he traveled through the provinces, ready to carry out any of his numerous building schemes. They were, of course, far more highly trained than the common military staff described above; were, in fact, the cream of their professions, as their work shows, from the Hellespont to the Nile. The bulk of them were probably Greek, as Hadrian's predilection for Greek art is well known, and they were doubtless great agents for spreading the best neo-Hellenic taste, for Hadrian spent the larger part of his long reign in travel, and his building operations were constant and universal. In his villa at Tivoli he made an architectural compendium of the ancient world, a *multum in parvo*, where the various most famous types of buildings were reproduced, not only those of Greece and Rome, but those of Egypt.

SALARY.—Theoretically, an architect had as high a position among the Romans as among the Greeks. Roman law and society also made the strictest distinction between a craftsman who worked with his hands for wages and a follower of the liberal arts who practised his profession for its own sake. The former was a menial, the latter a gentleman. The gulf between the architect and the workman was even more enormous than in Greece, because, while the greater part of the finer work seems to have been done in Greece by citizens and foreigners (metics), free labor was almost completely superseded by slave labor in Rome before the close of the republic.

The word *honorarium* was used to express the remuneration of men who followed the liberal arts and did not render personal service under *contract*. Labor by contract was regarded as vitiating their character as freedmen and

citizens by those who, according to the early traditions of prehistoric Greece and Rome, looked upon the liberal professions as priestly offices, whose knowledge was a heavenly endowment. The lawyer, for example, was not supposed to contract for the amount of his remuneration before rendering service.

It was not until Septimius Severus, it is true, that Roman law appears actually to have classified both the architect and the contractor, as well as the surveyor, among members of the liberal arts, but this had previously been commonly understood. Quintilian, for instance, in his famous treatise on rhetoric, includes architecture in all its branches among the liberal arts. Even as late as Justinian, Roman law (Digest) describes as an "honorarium" the payment made to the architect.

SOCIAL POSITION.—In fact, the Romans held even more strongly than the Greeks, until the time of decadence, to the fundamental difference between architecture as a liberal art, practised by gentlemen, and sculpture and painting as degrading occupations, suited to slaves and freedmen. It is Plutarch who uttered the famous *dictum:* "No well-born young man, even after seeing the statue of Jupiter at Pisa, or that of Juno at Argos, will wish to be a Pheidias or a Polycleitos; the work may charm us with its grace, but we are not forced to esteem its author." Lucian elaborated the same idea when he addresses young men: "Even if thou wert a Pheidias or a Polycleitos, and should execute a thousand masterpieces, the praises would be only for thine art, and among the applauders there would not be one who, had he common sense, would wish to be in thy place. * * * If thou become a sculptor, thou wilt be but a day laborer, using up thy body for a paltry wage; thy mind will shrivel; thou wilt be cut off from all, powerless to defend thy friends, intimidate thine enemies, or excite envy in thy fellow citizens. However talented, thou wilt always pass for an artisan, a low workman, a man living from the labor of his hands."

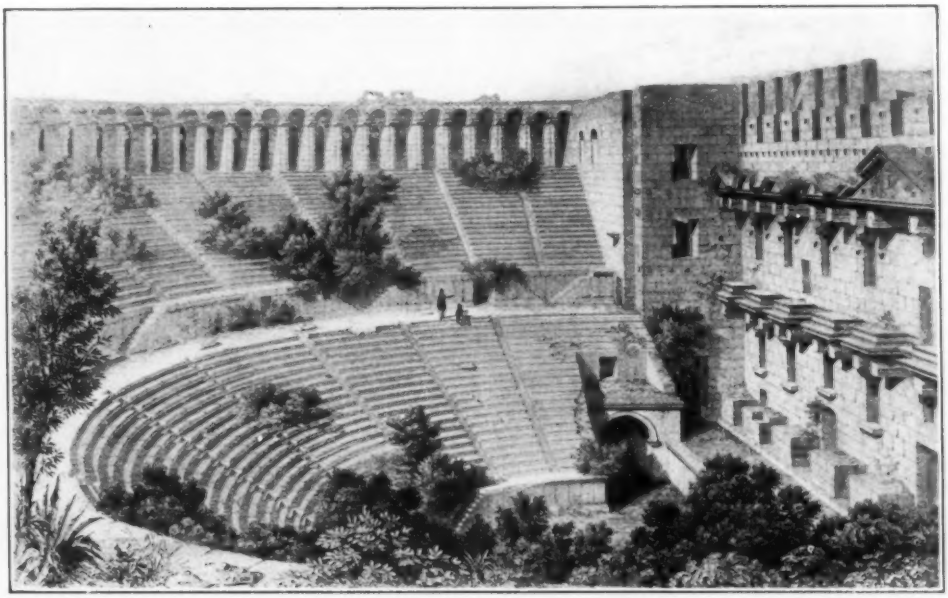
This social ostracism was evidently not pronounced against architects *ipso facto,* but their social standing was determined by the usual canons applied to all. We have already seen that as in so many other professions, some architects were slaves, some freedmen, some Roman citizens. The very full list of architects given by Ruggiero in his Roman Epigraphical Dictionary contains names belonging to all three of these branches of the Roman population in almost equal proportions.

It would therefore be absurd to draw any conclusions as to the education and standing of architects as a class that should apply to all. Still it is evident that even the architects who were slaves —Greeks, for the most part—stood in the very front ranks of slavery, were given a position of confidence, responsibility, and were often more learned and able than their colleagues of free condition.

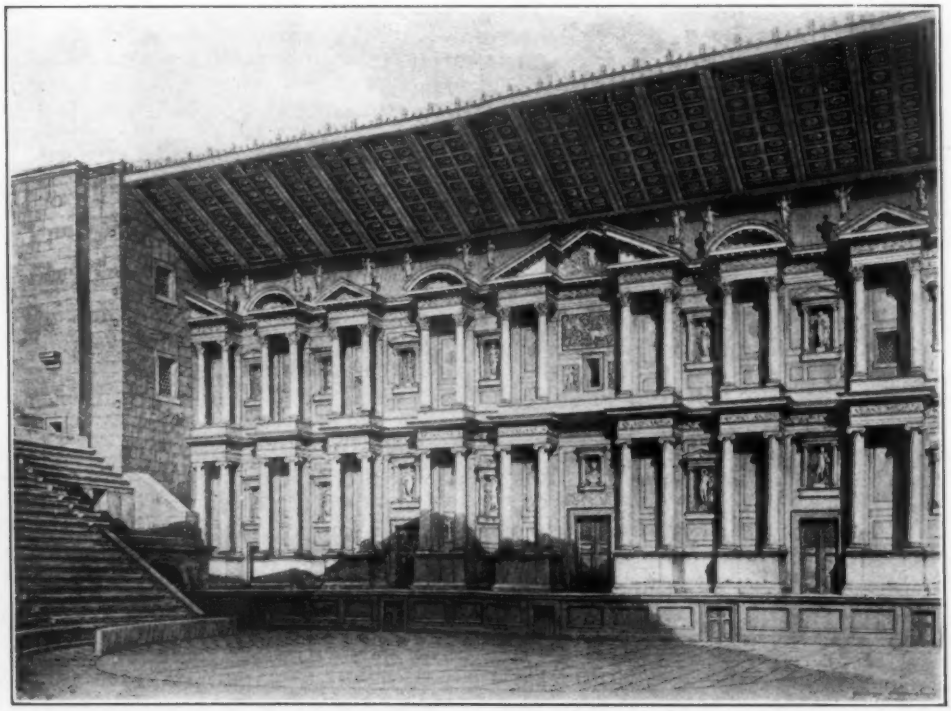
These slave architects were, of course, in private employ and worked exclusively for their owners, except when loaned to a friend or hired out. But we must imagine that most of the Roman aristocracy and *nouveaux riches,* after the age of the Gracchi, had one or more architects among their slaves, as Cicero, Sextus Pompey, Crassus and others are known to have had. The letters of Cicero will give us, later, a glimpse of these private architects, both slaves and freedmen. In such enormous establishments as those of great landowners like Crassus, which were as self-sufficient as small towns, there were a number of architects of the different social classes.

CONTRACTORS.—The presence of these numerous slaves and freedmen in the profession probably affected the relation of architects to the contracting business, with which they seem to have been but little concerned. There are a few cases, certainly, in which a Roman contractor was also the architect. Lucius Cocceius Auctus, of Puteoli, already referred to, was an instance. But such cases were far rarer than among the Greeks.

In fact, the contracting business seems to have been largely a mere matter of



THEATRE OF ASPENDOS (ASIA MINOR), BY ARCHITECT ZENO



THEATRE OF ASPENDOS, RESTORED.

unprofessional speculation, in which only the sub-contractors were professional builders. Speculators were in the habit of making bids and furnishing capital, for the method of payment was not as favorable to the builders as it had been with the Greeks, so that the professional man of small means was at a disadvantage and needed the aid of capitalists. In Greece the contractor worked with the capital of the state or the owner, by means of the prepayment system; whereas, among the Romans, the usual custom, under the Empire at least, was to begin payment only when a certain proportion of the work had been done. Still, the Puteoli contract, which I shall soon quote, shows that in republican times the Greek method was also followed.

Contracts by measurement or for a lump sum were both in use, and will be described in connection with both public and private architecture. So enamored were the Romans with speculative contracting that practically all repairing and running of public buildings was let out on contract, subject merely to the supervision of the proper city officials. In all this the architect took but an infinitesimal share of responsibility.

ENGINEERS AND THE STATE.—The remarkable preponderance of engineers in the field of architecture, which is becoming so characteristic of modern times, especially in the United States, was a trait also of Roman building: this is only one of the many ways in which we are now reproducing Roman conditions and characteristics. This was especially true in the earlier times of the republic, when drains, bridges, aqueducts, viaducts and such works of public utility exceeded in number and importance the structures of a more æsthetic character.

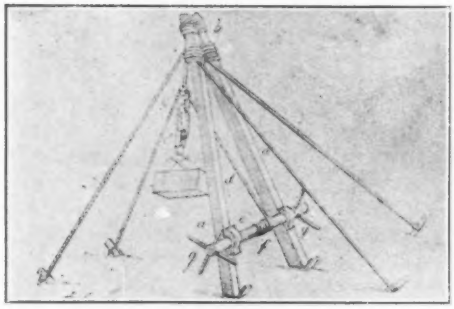
In the opinion of Promis, architecture among the Romans was at first not strictly an art, but a useful function of the state, and when, in the time of the Scipios, an architectural art arose under Greek influence, then, in about 200 B. C., the distinction was made for the first time between engineers and architects. The functions of the engineer continued after this to be exercised by State officials; bridges, roads, aqueducts, fortifications were still built by the army under official direction, while the Greek *art nouveau,* with its houses, for the first time artistic, its temples, basilicas and porticoes, came largely into the hands of Greeks and their pupils, of whom the majority were slaves or freedmen, though some were free citizens.

As we moderns understand the terms, then, engineers were public, architects private, in their work. But the term architect had with the Romans a more general meaning, including both classes. The military engineers attached to the legions were called architects, though they were also called "masters" and "machine-makers." A decree of the Senate under Augustus orders that each of the Curators of Aqueducts should be accompanied by an architect in his inspection of the aqueducts outside the city.

Architects were also attached by law to the commissioners charged with founding and regulating Roman colonies. They were among the regular attendants or *apparitores* of the magistrates. The magnificent network of colonies established as centers of Roman life throughout the world required a regular staff of architects and engineers; and the official building activity of this sort continued unceasingly up to the close of the third century A. D.

We can see, by reading the building regulations preserved in the constitutions of some of these colonies (*e. g., Lex Ursonensis,* in Spain), that there was plenty of work for an official group or *familia* of such architects under the direction of the local magistrates.

TEACHING.—While the value of architects to the state was fully recognized, it seems doubtful whether the state ever officially encouraged independent instruction in the profession until the period of decadence had set in. Until then private initiative had been sufficient; private schools and ateliers, with practical work in the *chantiers,* seem to have formed the total of a young aspirant's possibilities. Vitruvius has been already quoted on the subject of architects as



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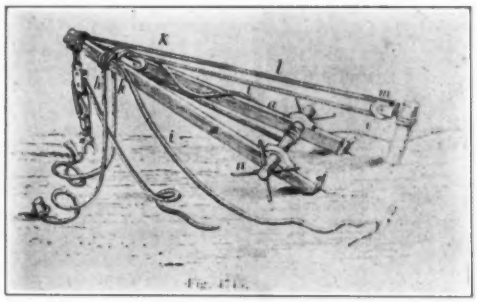


Type II.

teaching their profession to their sons and relatives, or as opening up their schools more generally to students.

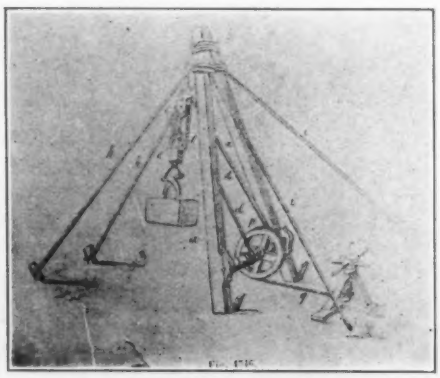
But at a later period, when the labor guilds were being organized in government service, during the third century A. D., the emperors turned their attention to the encouragement of the higher branches. The advantages granted to architects in the legislation of Septimius Severus, who confirmed the liberal character of their profession, were closely followed by those of Alexander Severus. They were freed from taxation and municipal duties, together with teachers of rhetoric, grammar, medicine and mathematics. Diocletian even established, at the close of the century, a rate for the remuneration of teachers of practical and theoretical architecture; and Constantine initiated, or perhaps only renewed, the plan of giving teachers of architecture a regular salary out of the imperial treasury.

The famous Edict of Diocletian, of 301 A. D., to which I allude elsewhere as giving standard prices for every conceivable object or subject, contains a list of the proper *honoraria* for different classes of teachers. It is reckoned somewhat after the German fashion, for outside of any state salary each professor is allowed to charge a certain sum each month for each pupil. We find the following rates:

Pedagogues and teachers of reading, $0.60 per month, each pupil.

Teachers of arithmetic and stenography, $0.90 per month, each pupil.

Master architects, $1.20 per month, each pupil.



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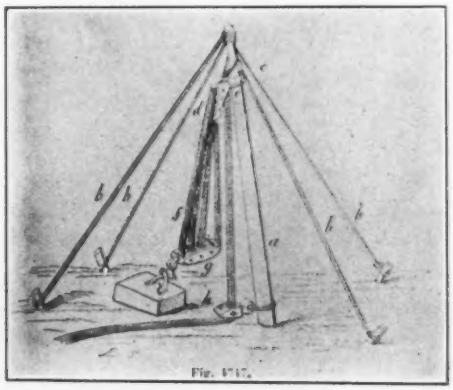


Type IV.

TYPES OF CRANES OF THE AUGUSTAN AGE—RECONSTRUCTED FROM DESCRIPTIONS IN VITRUVIUS.

(From Daremberg & Saglio.)

Construction of the Port of Terracina—The Architect and His Workmen.

Greek and Latin teachers, $2.40 per month, each pupil.
Geometricians, $2.40 per month, each pupil.
Orators, sophists, lawyers, $2.40 per month, each pupil.

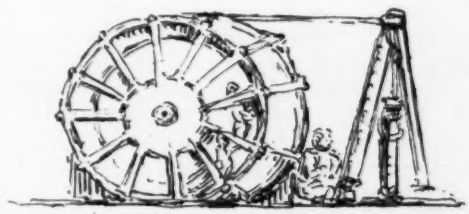
It is an interesting scale of rates. One thing seems clear. The teacher of practical architecture, the master architect, *architectus magister,* receives only half as much as the expounder of the *theory* of the subject, the so-called geometrician; for though the latter might otherwise be regarded as simply a teacher of higher mathematics, we know from other sources that at this time the scientific architect was distinguished from the mere builder by the names *mechanician* and *geometrician,* and that the theory of architectural construction must have formed a part, if not the whole, of the instruction classified by Diocletian under this head.

MODELS AND DRAWINGS.—There is not much indication that models of buildings were made by Roman architects; yet they cannot have been unknown. An interesting passage in Frontinus' monograph on the aqueducts of Rome explains how he found it necessary, in order to properly superintend their management and repairs, "to have models made of the aqueducts that show where the valleys are and how deep, where the rivers are passed, where the necessity most occurs of protecting the conduits where they run along mountain slopes. The usefulness of these [models] is that we can see everything before us at once, and can make our arrangements as if we were on the spot." These raised maps of the district between Rome and the hills where the water supplies were drawn covered a length of some fifty miles, and to be as accurate as Frontinus says must have required great technical skill in modeling, as well as minute accuracy in reproducing surveys. It is strange that we have even less knowledge of Roman than of Greek architectural models.

As for drawings, we may well suppose that the three classes mentioned by Vitruvius were all in use—sketches, plans and elevations. They were mentioned in more detail in my article on Greek architects.

MACHINES.—The dimensions of Roman buildings far exceeded those of the Greeks, and they required different and more powerful mechanical means. The substitution of immense masses of concrete and brick for Hellenic stonework, the use of vault and dome, and the development of vast interiors entirely revolutionized building processes.

Under Greek architects, I omitted the question of machinery because there was so little to say. It seems practically certain that during the first two centuries of temple building in Greece almost up



Work on the Amphitheatre of Capua.

to the time of the Parthenon, Greek architects had recourse to the primitive Egyptian method of burying the columns of a temple in sand when they wanted to put the architrave blocks in place; that they rolled the blocks up by hand and then excavated the columns!

*The Architectural Record, Feb., 1908, Nov., 1908.

Although the Greeks of the Golden Age appear to have known something of hoisting machinery, we cannot say how much, and it was not until Greek architecture was tottering to its grave that the great practical mathematicians of the late Alexandrian age applied geometry to mechanics for the purpose of inventing hoisting machines of tremendous force. The great inventors were Hero, of Alexandria, and Philo, of Byzantium. The Romans, beginning with Vitruvius, simply utilized their inventions.

In Book X. of the Roman architects' manual, these machines are so carefully described that we could easily reconstruct them. Only one of these cranes or derricks, the least powerful, has a single beam, and though easily set up, is not so easy to handle as the others. The most powerful consists of two heavy beams, planted in the ground, bolted and roped at the top, and held by four ropes. The double tackle-block has four pulleys and a heavy tongs to hold the blocks of stone. The hoisting cable was passed around a wheel fastened to the center of an axle across the lower part of the timbers and then passed on to a windlass set up a little forward. Still, with the development of the colossal in architecture under the Antonine Emperors, there came undoubtedly into use larger and more elaborate machines than those of Vitruvius.

One of these machines is reproduced on a relief from Terracina, which represents the building of the port in the time of Antoninus Pius. The architect is standing, wand in hand, directing. Two stonecutters are preparing the stone roughly with hammers. On the top of the wall a man is leaning forward, bringing into place a stone that has been raised by the machine which stands in the background.

Less strictly accurate seems an interesting relief from Capua, which represents the building of the proscenium of the amphitheatre by the contractor, Lucceius Peculiaris. He is seated, overseeing the work. An enormous wheel, attached to a derrick, is being turned by a treadmill worked by two men, who walk inside the wheel. The cable is hoisting the shaft of a column, while a marble-cutter is carving its capital on the ground. We must believe that in reality the wheel was not as large in proportion to the height of the derrick.

The most important artistic representation of a machine is that of one more elaborate than any described by Vitruvius, and probably invented after his time. It is on a relief in the Lateran Museum, which represents the construction, perhaps, of the Mausoleum of the Haterii. Several workmen are in the treadmill wheel that winds up the fall, while two more workmen are perched on the top of the derrick, attending to the working of the cable and ropes.

Lifting Crane on Relief of the Tomb of the Haterii—Lateran Museum.

Neither in Vitruvius nor in the reliefs have I found any trace of swinging cranes used in construction, and one might doubt their existence were it not for the description of certain swinging grappling machines used in defending city walls, which prove that they were in use in military engineering, at least, even in the republican age.

A. L. Frothingham.

THE PIAZZA OF ST. PETER'S, ROME.

The Significance of Architectural Form

The expressive power of architecture is worthy of greater consideration and more thorough study than it usually receives. We have been for so long reproducing and setting one beside the other, scattered *motifs* of the styles from Egypt to Louis Seize, that we have to a great extent lost sight of what varied ideals and racial character they originally symbolized and how perfectly they mirrored the times out of which they grew.

Everyone, to be sure, distinguishes Greek forms as severe and chaste, the acme of symmetry, Roman as grandiose, Gothic as picturesque and suitable for ecclesiastical purposes, and the Renaissance as useful upon any ordinary occasion. Upon these lines there is usually an appropriate selection, since draw from the past we must in this age, according to the varied requirements and character of our many kinds of buildings. The Greek style is seldom used, except in fragments and in small buildings devoted to learning. Banks and railroad stations show a leaning to Roman forms. The Church naturally holds its own with Gothic. The French "epochs" are mostly devoted to drawing-rooms and other apartments devoted to formality and luxury. But the significance of the classic order, the Gothic arcade, the Moslem dome, is a deeper one than associations of this kind, though propriety is our guide in the selection of a style best suited to express or harmonize with particular phases of a kaleidoscopic civilization. There was nothing, however, haphazard in the birth of the styles, and their growth has been governed by the great laws of evolution. There is no need to prove, since it has been a subject dwelt upon by many brilliant writers, that, through use of line and surface, mass and proportion, architecture may give expression to many attributes of mind, as power, grandeur, beauty, refinement; and that climate and the temperament of different nations, as well as utility and available materials, have been important factors in the development of architectural styles.

While even reiteration of this truth may not be amiss in this time of inappropriate borrowing from the past, what has usually been lost sight of is the extent to which every "style" has been a reflection of the life of the particular time and place which gave it birth; or, putting it reversely, with what completeness the arts, and, particularly, architecture, receive the impress of humanity in those variations of character and aspirations which produce racial and national distinctions, and in the homogenity of thought and action which individualize one epoch from another and the local fragments of epochs from each other.

It would require a lengthy work of exhaustive analysis of the buildings and of the civilization of all ages to prove in detail the amount of truth in this statement; but its basis, in fact, and its inevitableness need no very lengthy demonstration, and to many, no doubt, it is a truth not requiring establishment.

The perception of a significance of this kind cannot, it is true, be weighed or measured with any more actual scale than can the perception of any artistic verity; but the relation is not a fanciful, but an actual, one.

Besides receiving impressions of such broad character, every design necessitates some individual expression, no

The Parthenon, Athens.

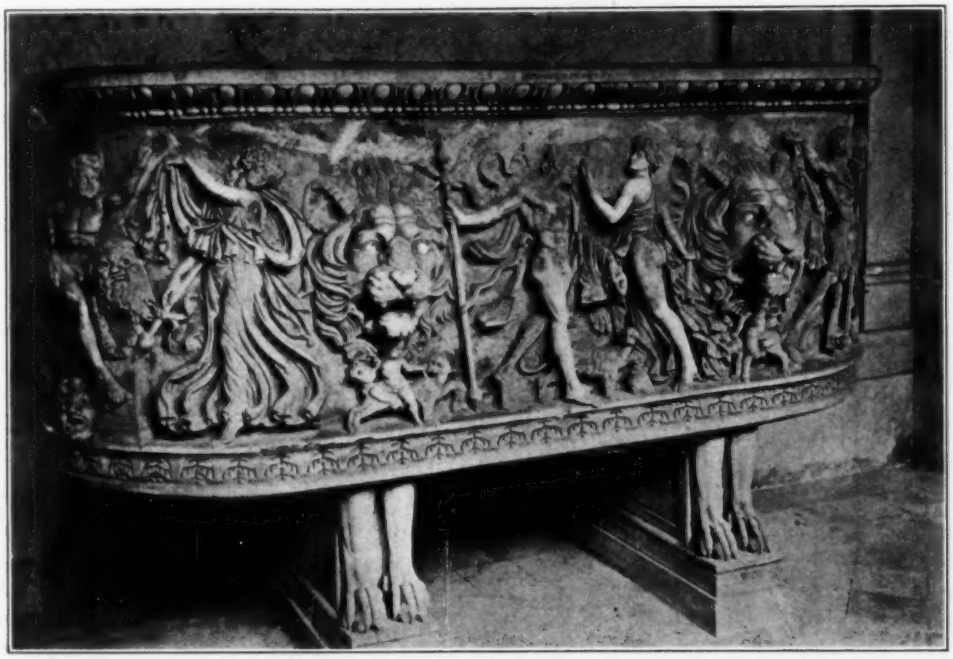
matter how old the language in which it is conveyed. So it is that old phrases, whether coined in the Forum or Versailles, may voice the thoughts which germinate in the breezy prairies or in frenzied Wall Street. However correctly do we reproduce details and keep each feature pure in style, the modernity of a whole design speaks loudly. But it is, of course, from the older styles, the times when only one language was spoken at a time, and that one in the course of making, that we can derive the clearest knowledge of how closely the form is the outcome of the spirit of its day.

Architecture is, first of all, expressive of necessity; thus it is always in touch with every-day life. Domestic architecture forms by far the largest, though not the most permanent, class of building; and in our more ambitious and monumental efforts even, practical and utilitarian requirements are always of foremost necessity. Then enters design. Walls, columns, roofs and other features of structure are not to remain merely useful; we want them pleasingly disposed and proportioned, even made beautiful, if may be. Now, the mentality of the designer must, inevitably, be expressed to some degree in his design, and, the limitations of architecture being such that the individuality of each designer can never be very prominent, it is chiefly the collective individuality of the day, the place, the nation which will stamp itself upon the work. Comparative study of the architecture of different times and people will show that it is always an embodiment of human character and national traits, more veiled and unconscious than in other arts, but none the less exact and also more comprehensible perhaps than any other. The emotional range is less, but it is the most complete record in art, outside of literature, of racial character and development.

The preferences of particular nations or epochs for certain lines and characteristic form, as the Greeks for the column and the horizontal line, evidenced in their faithfulness to the systems of the entablature, or the mediævalist, on the other hand, for perpendicular lines and arch construction, which is shown in the development of the lofty buttressed vault, tower and spire; such preferences are indices of character and ideals. We will first compare and contrast some of the most marked generalities and then attempt a more detailed analysis to account for these variations of type. Greek design is pre-eminent for symmetry, unity and simplicity. These characteristics are also to be found in Egyptian architecture, but monotony and massiveness rule in place of delicacy and fineness of rhythm. In the Middle Ages the fundamental ideals of classicism were reversed. Precision of detail and orderly refinement of a limited number of forms were rejected in favor of a multitude of forms massed and harmonized together, but with

symmetry a very minor quantity. The arch and vault systems in the Gothic development lent themselves readily to the expression of ideas of variety, balance and complexity of harmony. Here, then, we have two great types of design and construction radically opposite to each other, just as the creators of each were diametrically the opposite in temperament, ideals and customs and their manner of looking upon life.

It is true that all original styles took form very gradually through centuries of growth, and that the way of progress and change was always shown by structural invention or experiment. However, we have not sounded the depths of meaning or entirely "explained" Gothic architecture, let us say, when we have carefully followed the logical evolution of the vault construction which took place, as is well known, in step-by-step modifications from the Latin barrel vault and Byzantine dome until it culminated in the thirteenth-century cathedrals of France. We miss the whole kernel of the matter if we say that inevitable development of an engineering problem fully accounts for the really characteristic features of the style, and that the artist had little to do with its significance beyond clothing the form with harmonious ornament. The question still remains: Why did this particular development take place in the northern countries and not in Italy? Also, Why should it have taken place at all, along such lines, that, when harmoniously proportioned and adorned, it is in its entirety such a vital and consistent expression of the dominant notes of thought of its day? Only because of the intimate and constant relation which exists between man's constructive works, and not only his ideas of utility, which are directly expressed, but, at the same time, and seldom in conflict with utility, his æsthetic preferences and his every marked trait of character or mentality, in a limited way as an individual, but more particularly as a nation, a race or an epoch.



GRAECO-ROMAN SCULPTURE.
A Sarcophagus in the Vatican.

That is the basic principle which accounts for the evolution of architectural form, and is the ultimate meaning of all style.*

In its application, this law cannot be reduced to the precision of a formula, but its bearing is universal and constant. As the clay, under the hands of the sculptor, takes form, there goes with every impression of his fingers something of his personality. When the musician composes and the painter lays on his colors, though thinking of nothing beyond the tonal or color harmonies they are creating or recording, yet the work conveys, in greater or less degree, impressions of much further truth. Just so, beautiful form has its inevitable accompaniment of idealistic or emotional suggestion. Not that it needs symbolism to explain it, nor labored expression of idea or purpose to justify it; in a way it is sufficient unto itself and for its own sake. Yet the distinction between the fine and the commonplace is precisely in the acquisition of an expression of things beyond the range of superficial imitation. So it is that, into the geometry of design, into the organism of construction and the rationale of material, just as in the mathematics of music, does there creep at times emotional expression. Forms, in which appear to be concerned only questions of proportion of masses of material in light and shade and of the virtue of line, imprison in their rigid substance the poetry of life, the genius that distinguishes its day from all the yesterdays.

Sainte Chapelle, Paris—Gothic Idealism.

As architecture is so closely bound to every-day life, so is its expression particularly intimate. It is very observable that strong personalities leave their individual mark in designs, creating, too, an influence for particular proportions or quality of line, color or ornament. Nor is it hard to read certain attributes of the temperament of the individual therefrom. Still truer is this influence and this reflex expression in the aggregate work of a century. Then does the harmony we speak of stand out boldly. It may be of interest to glance at some of the great periods of architecture's history with this idea in mind.

The Greeks expressed in their art a moral simplicity, a sensuous gladness and a mind clear, concise and logical. Architecture and sculpture were mutually dependent, and each had a part in the perfect embodiment of these ideals. They share in revealing an unequaled sense of beauty, beauty which was rhythmic, pure, serene.

Sculpture spoke more of man's nearness to nature, and architecture of his superiority, not so much from his possession of a soul or an imagination as from his power to reason. Though all Greek art is rational, her architecture is exclusively so. It is amazingly beautiful, but it is such beauty as arrives

*Santayana says concerning the fine arts, in his "Reason In Art":

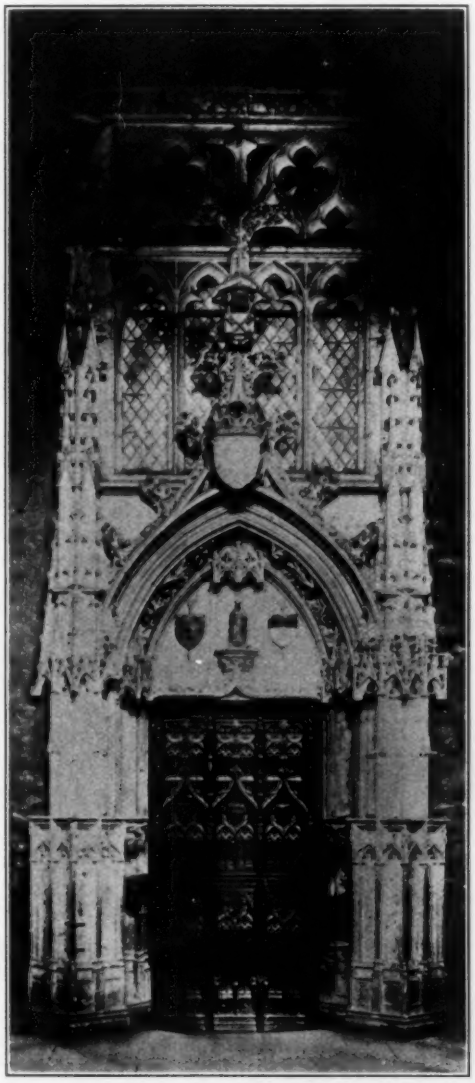
"There is no conceiving or creating them except as they spring out of social exigencies. Their types are imposed by utility; their ornamentation betrays the tradition that happens to envelop and diversify them; their expression and dignity are borrowed from the company they keep in the world. . . .

"Structure by itself is no more beautiful than existence by itself is good. These are only potentialities or conditions of excellence."

through calm study of the accurate adjustment of parts and the minute refinements of line. It is unswerving in its obedience to the laws of symmetry, harmony and fitness. So also was the Greek's conception of life and the manner of his ordering it. The foundation of his æsthetic creed was to give rhythmic expression to form. He was both poet and philosopher, but mostly man and pagan, very alive and very beautiful. Form, rather than emotional expression, is the tendency of his art, though it has always life. The visual effect of smooth surface and delightful contour to be perfected, even at the risk of coldness. Every work, however, is spontaneous and instinct with life, in which the original differs from its attempted revivals.

In the Greek order there is nothing vague, nothing crude; every moulding is studied for its exact effect upon the whole design. Every ornament is cut with finished, though scarcely mechanical, precision. The long, horizontal lines of the stylobate and entablature are given subtle curves, and similar refinements are carried through all details. Simplicity in masses and in detail: in everything the mark of restraint and refinement. In all this we see the same predominating features of character that we may gather from Hellenic literature and history. We may find tragedy there, it is true, which we will not in her architecture; the latter has much poetry, but it is lyric, not tragic. The disposition of the Greek is, however, normally lyric, as may be expected from the healthful life of the man fond of sunlight and the blessings of the earth. Aiming at physical perfection, he was not bothered with the emotional possibilities of his soul, but possessed a wonderful sense of that harmony which translates the beauty of life and nature, and which we call *art*. His art was himself at his best.

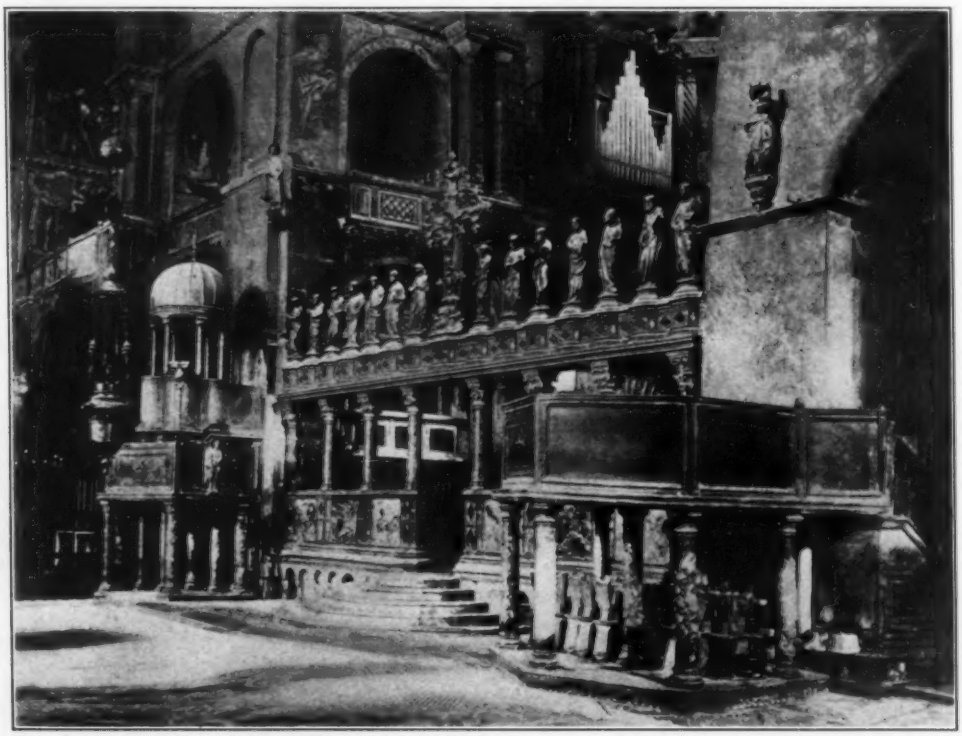
Breadth of surface and delicacy of detail are characteristic not only of Greek, but of all good architecture, as are also repose, proportion, the essential element, at least, of symmetry, and, above all, life. Incidentally, it may be said that good art, whether classic or mediæval, present-day or future, goes back, or will go back, to these same rudimentary principles. To conform to the usual dogma as to the common root of these first



Entrance to Sacristy, Bourges Cathedral—Gothic Lights and Shadows.

principles, it would be proper to speak in this connection of "getting back to nature," "expressing natural law," etc. But this is merely a formula which elucidates nothing. And it cannot explain

anything, because, as a matter of fact, it is inaccurately vague. It is not to nature, but to humanity, to *human* nature, or nature in man, if you will, that we must look for the source of inspiration of architecture and also of music. It is in the mental faculties of man, in his imagination and emotions, and the harmony which these bear to nature, that her laws and her meanings are hidden. It is to these that we must look for the key to her progress.



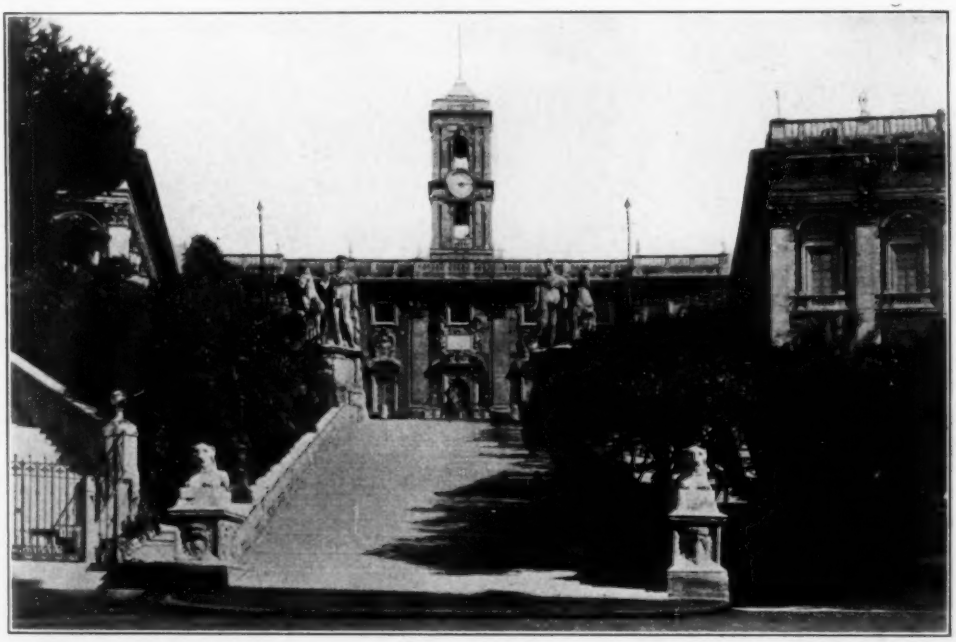
ST. MARK'S, VENICE—WHERE THE ORIENTAL AND THE ROMANIZED BARBARIAN WERE FUSED.

Roman architecture is interestingly significant. The Greek orders were borrowed, but enriched with greater profusion of ornament and moulding—losing in refinement and in delicacy of line and surface, and becoming grandiose and superlative. The massive and grandly conceived structures of Rome bear the seal of imperialism: the triumph of ambition, the dignity of fame, the luxury and also the arrogance of power. Assimilating Greek art and learning, the Romans missed its finer shades of meaning, but developed its art language to express their own coarser, but vigorous, ideals. Their two most typical motives, the arcade with attached columns, with a ponderous high and flat "attic," usually superimposed, and the flat dome lent themselves as perfectly as anything the mind can conceive to the complete and exact expression of imperial Rome. The Coliseum, the Pantheon, the baths, the triumphal arches; no works could be more indelibly stamped as the creation of the world-conquering power—Rome, the Eternal. Urbis et Orbis. Witness this spirit reincarnated in St. Peter's.

If we turn now to a glimpse of mediæval architecture, we find the direct opposite of the classic idea of symmetry and severity of line precisely as the mediæval mind is the opposite of the Greek in all its leading attributes, its philosophy

and idealism. The means used to carry into effect so radical a departure may be summarized as the discarding of the horizontal line in favor of the perpendicular and of the entablature for the arch. Gothic construction is extremely rational, but the logical spirit is not supreme in the moulding of the structure into architecture as it is with the Greeks. The hand of the poet is evident in the massing, the dividing and proportioning of the whole, and in the carving of its members. No written book could reveal more thoroughly the spirit of the Middle Ages than do her cathedrals and her feudal buildings. Into them her loftiness and narrowness, sensitiveness and barbarism have been breathed. The soaring lines of the Gothic church, its rich complexity of composition, down to the least of its carvings, reveal the active imagination, strong individuality and ardent spirituality of the northerner and the Christian, and also his warlike impulses and his comparative savagery of taste. The man of this age was intense and full of extremes, both tender and cruel. He had an imagination which carried him where reason never would have. So is his architecture intense and fanciful. Complex, fond of light and color, at times fair and lightsome, at others gloomy.

And so we may turn the pages of history and always observe the reflection of man's life in his buildings. We may pause with interest at the works of Louis XIV. and the succeeding "periods." Here is the style of the court, sensuous softness of form, as of life; the refinements of luxury and ceremonial, the apogee of the monarchial regime, and, at the same time, of the courtier and the courtisan. Refined to an extreme degree, admirable in the largeness of its conceptions, the completeness of its effects, and perfect in the delicacy and consistency of its detail, it is fatally artificial, because the product of artificial conditions.



THE CAPITOL, ROME—THE DIGNITY OF THE RENAISSANCE MOTIVES THAT ARE STILL SIGNIFICANT.

England, during the same period, was making its own use of the imported Italian forms. A dignified, if somewhat sombre, style was created in keeping

with national traditions and ideas. Inferior to the French both in splendor and refinement, it excelled in one type of building—the country home. From cottage to manor house, it displays a wonderful harmony with surroundings and an expression of the most fitting and lasting meanings of country life and home.

Germany, too, interpreted the Renaissance in an individual way and infused its fanciful conceptions, half mystic, half materialistic. The low countries found still another rendering, fitting easily to local variations of thought. The sensitiveness of architecture and its facility of expression are forcibly illustrated by this wide divergence, as to the product in various parts of Europe, growing out of the same Italian Renaissance heritage.

The Gardens at Tivoli—The Poetry of the Renaissance.

A period of artistic barrenness set in throughout Europe during the last century. Political reconstruction and the progress of science and mechanical invention engrossed men's thoughts. Architecture fell back on imitation and reproduction; then the spread of commerce and the rapid development of means of communication destroyed the exclusiveness of nations which had been an essential factor in creating their individuality and in maintaining the character of their art. The commercial idea became dominant in affairs, and architecture had to conform as best it could, with much resultant compromise. Also, the mechanical complexity which distinguishes modern building has forced many inconsistencies upon design.

The typical constructive motive of today—the steel frame—has scarcely a vestige of suggestion of anything worth while to art; it is necessary to do more than ornament or model this skeleton, since it is too rigid, too elementary to allow anything of the kind. What appears to be the building is a mask, a make-believe, in which an imaginary construction has to be more or less resorted to in order to convey even the rudimentary necessities of proportion and the composing of elements, without which there can be no design or architecture whatever, nor any beauty in constructed form, since the latter is not an accidental, not a necessary, thing. In these times, to be sure, we have come to an end of the direct relations that had existed between form and expression; a matter not without a simple explanation.

This is an age in which everything has become specialized. The field of knowledge has become so large that no one mind can command more than a limited range in detail, and must be satisfied with a superficial inkling of the rest. So we are separated in groups, mentally, each group knowing little of the labors of the others, but having full power in its own sphere and buying as it needs of the works of the others. Scientists of many kinds, the great mercantile and financial body, artists in their several branches, and so on. So we may naturally expect much less consistency and less breadth of expression in an art where utility and the æsthetic sense are joined.

Our modern buildings have their significance, but it is one full of contradiction, pretense and irrelevant use of

HOTEL KNICKERBOCKER, NEW YORK—MODERN COMMERCIALISM.

form. However, the dominant passions of the time are just as much as ever to the front, though expressed between the lines, so to speak, and often in the very limitations and inconsistencies imposed by commercialism and engineering. But in spite of all the confusion of styles and lack of consistent development, if we look beneath the borrowed language to the very different purposes it serves, to the revolutionary construction and planning it is forced to conform to, we may see great changes in the matter expressed, though each individual form may be so little modified. Though we have no modern style, in the complete sense of the word, we give abundance of present-day character to the old styles of which we make use. This is especially true of the French school, withal that the Beaux Arts is usually supposed to stand for the academic, in form and formula, rather than for a grasp upon new thought of radical innovation. The most important lesson taught by the French, however, though not the most readily learned, is precisely to apply the rudimentary principles of design in a rational manner to the solution of each problem. Of comparatively secondary importance, are the grammar and convention of form.

As a matter of fact, for many classes of building, more especially the commercial, it is a matter of small importance whether the ornamental detail is Italian or French Renaissance, or is Roman in flavor or some other. So long as the selected forms maintain correctness, decorum and scale, one style is often as well as another. What counts more in distinguishing such a design is whether it has secured good proportion and composition, harmony and scale in primary features, and, lastly, whether detail has been managed with the not-easily defined intuition of fitness. It conveys little meaning to say that a certain skyscraper is early French Gothic or pseudo Roman, or this or that in style. It is nothing of the kind, except as to some of its detail. Essentially, it is just skyscraper or steel-framed architecture. This is the extreme type, of course, of the new order.

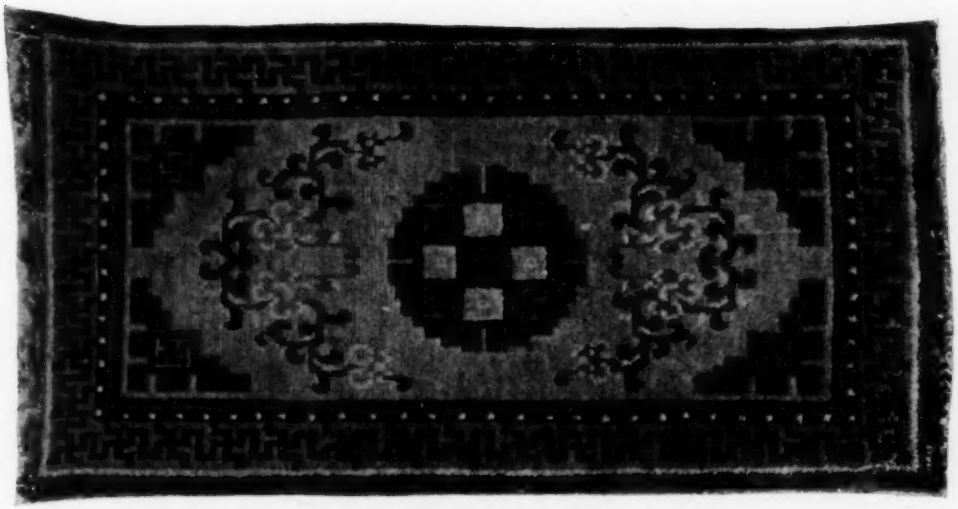
Smaller buildings in which the proportions and construction are not so radically different from the old, permit of a closer adherence to the real manner of the style which is copied. In domestic architecture, of course, commercial necessities are less in evidence, and work in this field, particularly in America, has not only produced some of the most admirable examples of artistic expression, but also affirms the irresistible influence of contemporaneous life.

In one new material, or rather in the original use of an old one, there is much inherent possibility of consistent expression. We refer to reinforced monolithic concrete construction. Ready-made convention need control the designer little, for here is a material and constructive system, in fact, in which the gamut of suggestive expression has not already been run through by more masterful, or, at any rate, more fortunately environed minds than ours. And it has this advantage that its apparent form is an essential expression of its real form; whereas in the steel skeleton there is no organic relation between the real and the apparent construction, with the result for the latter that it can never create new detail or distinctive treatment (except in an abortional manner) beyond that given by its novel lines and plan system. Yet, as we have pointed out, even familiar, hackneyed forms brought into new combinations, modified to fit new conditions, require the power of expressive design, and, where the latter is present, they become inevitably significant of new thought.

Limited and full of inconsistencies as is architecture's present power of expression, it is even yet a plastic and impressionable medium for the subtle recording of character.

The arts are, among other things, the pictured and poetic history of man. In this living book the pages written by architecture are marked less by personalities than those of painting, literature or music; yet they have pictured faithfully creeds and philosophies, the souls of nations, the essence of civilizations.

H. Toler Booraem.



THE INTERLACING SWASTIKA.

Old Chinese Rugs

A novelty among fine old rugs is almost incredible to connoisseurs who have studied and perhaps collected Persian and Indian marvels of the hand loom all their lives. But if old masters of oil paintings are "discovered" from time to time, that is to say, if the superior merit of certain old masters of painting hitherto neglected is all at once appreciated, why should there not be similar finds in woven works of art?

Of course Chinese rugs have always been known to exist and in the bales of rugs coming from Smyrna they were not infrequent. But not long ago such intruders were regarded askance as lowering the average value of the bale —now they are picked out and carefully cleansed, repaired and put in shape. Why is this? Simply because it has been recognized tardily enough that China has once more shown her superiority over other nations in a subordinate but none the less important branch of art, just as she has shown it in porcelain and pottery, in brocades and silk shawls, in jade and ivory.

The rugs of China are now eagerly sought all over the world. That eagerness shows in the way in which good examples are snapped up at sales when a collection proves to have some.

One curious psychological effect, however, may be observed in such changes of estimate on the part of collectors. For example: in ceramics the connoisseur who has made Japanese porcelains and potteries a special study and then turns to Chinese, is almost certain to go over to the older nation with so much zest that he does his former love injustice. It is very much like one who admires a pupil's work hugely until he finds that of the master and then proceeds to scorn the disciple's pictures.

Yet in the matter of Chinese rugs this analogy of master and pupil may seem strained, for it is extremely doubtful if China will ever be proved to be the earliest home of beautiful and artistic rugs. Of course, mats of rushes and colored rugs and carpets of wool and hair and cotton must have existed practically from prehistoric days; but the high plateaus of Central Asia seem to be the original homes of the rug as a thing of beauty, an object connected

with the most intimate home life, with all public functions like law giving and justice, with ceremonies of all kinds not excluding religion. So far as we can gather from the Chinese annals the making of beautiful rugs is comparatively recent, not going back far beyond the middle ages.

A lot of Chinese rugs thrown together on a floor near a lot of Persian or Indian or Anatolian is instantly recognized as Chinese by a kind of warm, dull tone pervading them, a predominance of browns and gray-browns, of blues dark and light, of dull reds. As one turns them over the Chinese appear less vivid in colors, or at any rate less broken up into small details. They have large restful spaces and are prone to offer big simple structural designs that give them great significance and allow them to be used to good effect in

The Swallow Myth.

The Sacred Deer.

rooms or galleries of a certain size. There are many Persian rugs for which it is difficult to provide a suitable interior, so pronounced are the colors, so brilliant the scheme, so lively the design. Chinese rugs on the other hand are very commonly, though of course not always, grave and unobtrusive, forming a warm but not noisy ground for furniture and pictures, decorative walls and ceilings, or masses of gaily clad women and men. In fact, the character of the Chinese may be felt in the superior classes of their rugs which reflect their seriousness, respect for tradition and thoroughness as artisans.

What strikes one after the color effects is their feeling for composition and decorative design, not merely as they treat the middle parts of the rug, but as they treat the borders—their number, width and colors.

When the new taste for old Chinese rugs first asserted itself it seemed comparatively an easy task to separate them into rugs of different provinces and of different reigns. But the huge empire soon proved so great a reservoir to

draw from that the number and variety of old and antique rugs bewildered the stoutest. It is like the scientists with the ancient bones of the Bad Lands. Marsh and Cope gaily sallied forth to reduce these extinct lizards and fish to nomenclature, each being their Adam, each giving his own set of names. But the wealth of material has overwhelmed the tabulator. It is only by comparison and long pondering that one can make up one's mind whether a rug belongs to the fifteenth or the nineteenth century.

Now though in rugs the color stands first and is followed by design, the art of the rug does not exclude figures of men, birds and beasts, or fabulous animals and of stars. Some Chinese rugs are prominently marked with objects that give them a class value, such as sceptres and books and incense burners and ink-wells. Such pieces are for the literary class, others, little different, for mandarins. We find the Happiness rug marked with the character which means happiness, and bats which in their forms spell happiness, because in Chinese the sound for bat and happiness is the same. The Longevity rug has symbols that are believed to act as talismans prove to avert sickness and death. Some rugs show in an extremely conventional way the Sacred Mountain in especial, as distinguished from many sacred mountains in different parts of the country. This mountain may be a reflection from the mountain plateau of Thibet, over which came from India many legends and tales; but its significance is larger than that, for in many cases it seems to represent the whole world, or its three peaks the triple world.

Another class which can be made fairly definite, owing to symbols interwoven in the borders or the general field, consists of Buddhist pieces, while a seventh may be formed to take in the mythological rugs, that is to say, those which have more than conventional dragons, we will say, as a decorative motif solely, but go so far as to tell a story.

There is among our illustrations a very unusual specimen for the Chinese, a landscape with temple and platforms for buildings and flowers, both tree and bush. The Stag, a symbol of longevity, has ascended the stairway and is nibbling at some Peach blossoms, emblems of generative life, while above are swallows disporting themselves in the air or comfortably resting on the roof tree.

The Greeks loved the swallow, and ancient as well as modern Greeks hail its advent with the swallow song. Like most peoples of Europe the Chinese believe that luck attends the nesting of

Six-Dragon Geometric Rug.

the swallow, particularly so if it builds in a newly erected house.

But this kind of a rug is rare. Usually the weavers are less concerned than the bronze casters and decorators of porcelain to insist on mythological figures save by implication, as lace-makers will include figures of human beings or animals for decorative purposes.

Among the favorite figures are Lung the dragon, playing with the mystic Chin, a pearl or egg which reminds one so keenly of what Caesar and others tell us regarding the Druids—how they sought the mystic Serpent Egg and

strove to take it from a coil of snakes, in order to gain from it wisdom of all kinds, including a knowledge of the speech of birds and beasts. The dragon of the Emperor has five claws—the symbolic five of Asia—while that of other mortals including the Japanese Mikado has three.

Another creature fitted for decorative use is the Ki-Lin, the four-footed creature of both sexes and one horn which appears in mediaeval European literature as the unicorn and still holds a responsible place beside the shield of Great Britain and Ireland. The unicorn loved virgins and could be caught and ridden only by virgins. Like the angels it had both sexes in one—or no sex at all. As late as 1840 Father Huc reports that there is an actual one-horned deer of the chamois kind in the eastern mountains of Central Asia.

Sometimes we find the animals of the zodiac disposed about the border, not always in correct sequence, but fitted to their places in the spirit of decoration. The Chinese, however, seem chary of devoting the chief breadths of carpets to trees and figures of men and animals, like the "hunting" rugs of Persia.

A good example of rug with figures is that called "The Hundred Antiques", which holds a place of honor in this interesting branch of Chinese art. The ground is a warm apricot color on which the designs are expressed in a light and a dark tone of blue. It was evidently made for some Chinese collector who liked to be reminded of the objects which appealed most to his heart —for your Oriental collector ends by holding such objects dearer than wife and children. The border contains running bands which cross each other regularly to form the Swastika, as the East Indians call it, a cross with ends bent so as to signify revolution like that of a wheel, a symbol of various import in different places of the world, but in India more particularly specialised for the wheel of Indra's chariot, the wheel of the sun. From space to space this swastika repetition is interrupted by oval spaces to receive the sign called Shou, a sign that signifies good luck, prosperity. There are six of these medallions to each long side and three to

RUG FOR A CONNOISSEUR.

each short side of the rug. The character Shou assumes a singular likeness to the scarab of the Egyptians, though such a resemblance must be considered accidental.

In this example the objects of the main field are placed without much art so far as composition is concerned, the weaver feeling more desire to be exact than to compose them round a centre or various centres, as we find to be the case with later work more purely decorative.

brush. There are musical instruments and cases for books, dwarf trees growing from ornamental pots on teakwood stands—in fact we have by means of this rug a glimpse of the objects surrounding a man of literary and artistic tastes many centuries ago.

Much more carefully considered as a composition is the five-medallion rug, which has in its central medallion the phoenix flying above the horse of the clouds. Two large butterflies are above and below the centerpiece. The medal-

THE PHOENIX AND CELESTIAL HORSE.

This arrangement is quite naive. Here is the chess or chequer board with a piece beside it; yonder a fine blue vase of porcelain; to the left a screen to place before one's writing, and to the right a three-pronged rest for pencils or brushes of a shape which is still used in China. Incense burners are not lacking, nor flower-holders, nor a specimen of the rhinoceros horn or rather the conventional carving that is so called. There are scrolls with designs on them, books and ink-stones on which to rub India ink for writing with the

lions in the corners have a geometrical cast while the inner border has a running decoration of "hollow Ts" and the broader outer border a floral decoration broken by flower forms in profile.

Among our illustrations are many examples of the dragon, ranging from realistic forms with fierce eyes and carefully defined talons to others which are so resolved into pure decoration that one could scarcely guess their origin if it were not for intermediate shapes that show the progressive changes.

Here is a "Six Dragon Geometric" rug as it may be termed, quite formal, with an outer border of running swastikas and the severe corner decorations repeated in the four designs about the central medallion. As a relief to the square modeling of these geometric designs the six dragons are fanciful creatures with fairly well defined heads, but with legs and tails flowering into fantastic foliage.

Again on a light toned ground against which the objects are clearly defined we have suggestions for a literary mandarin in the books and scrolls bound with fillets, in the tripods bearing conspicuously the swastika cross, in the precious porcelain vases on teakwood stands holding flowers, in the sprays of tree-blossoms and stalks of growing flowers. But in this case there is a grouping about a central medallion, in which the ground between two rings of blossom forms, the petals separated and drawn in profile, is sown with little swastikas. The weaver of this rug could not get enough of this lucky emblem. Not content with putting it on the book-box and six of the vases, he must use it in its running form for the outer border. Observe also the two examples of Nine-Swastika rugs.

The Nine Lion rug is a beautiful bit of tone upon which the lions are at play like exotic dogs with bushy tails and are more humorous than terrible. Their manes and tails of a different color from the rest of their bodies supply a charming decorative note. The rest of the field is strewn with branches. The central "lion" sits peaceful and graceful as a squirrel, or say a pet spaniel; the four about him are seen from above, their heads only in profile, while the four in the corners are adapted to their places in a frankly decorative spirit.

Another Nine Lion piece has five of the beasts crowded into the central medallion.

As a rule we do not make clear to ourselves what it is that gives us pleasure in old rugs and brocades. We can understand it better if we take the analogy of music, which does not tell a definite story, but interprets moods and suggests trains of thought that are more akin to sensation than reasoning. That harmony is agreeable to the ear is proved by the effect of music, not upon man alone, but upon birds and beasts and insects; that harmony is delightful to the eye is also certain regarding a large part of animate creation. The effect produced by the soft colors and their clever combination in Oriental rugs is fairly analogous to that of musical harmonies which have no clearly defined message to deliver, but are none the less valued on that account.

Rugs are indeed scarcely less important to a household than paintings. Indeed, nowadays, that modern architecture in cities leaves comparatively few interior walls proper to the hanging of pictures, it may be that for town folk the rugs are of more avail. It is necessary to try them where it is proposed they are to remain, whether they hold their usual place on the floor or for some special reason are to cover a door, a wall or a piece of furniture. So that it needs taste and knowledge to so much as arrange a fine rug in a room, as much taste, for example, as to hang a picture. Indeed the picture may be said to be easier to place, owing to its frame, which sometimes is reinforced by a shadow box; this in some sort puts it apart from the rest of the wall; whereas the rug is in immediate contact with its environment, not fenced off like the picture in a little domain of its own. Then the daylight and artificial light have to be considered in order that, if possible, the light shall fall so as to go against the lay of the pile on the rug, that angle being the best for a display of colors.

Among Chinese rugs not included in these illustrations is one that shows the spotted Ki-Lin or unicorn with spray of fungus in its mouth, the same fungus that is used for the curving ends of sceptres, commonly carved in jade. This fungus is sometimes found with blades of grass piercing it and the fact seems to have impressed the Chinese imagination, for it is not infrequently represented. Then there are: the sceptre or wand itself, a sword of authority, castanets, or, as we should call them "bones", the red-tufted crane of north-

ern China, etc. Another has emblems of the Eight Immortals who are specially favored as saints by the followers of Taotse.

Another scorns to call attention by folk lore or mythic animals and rests its case on the taste the weaver has shown in distributing eight rings formed of conventional blossoms, each enclosing a Shou sign, and decorating the spaces between these eight rings with graceful floral sprays.

In regard to rugs one should never forget the origin of the art rug among dwellers in tents. It is to make up for the ugly black canvas or the coarse hides of the nomad tent, for its floor of loose grass or unprotected earth that the weavers of Central Asia have put forth their craft and those of China have followed suit. The rug is a saddle covering and a prayer-mat; it is part of the bedding at night and is a brilliant covering of the sitting-place by day. It makes portières to tents of chiefs and clothes the walls of elaborate hunting tents and movable headquarters for magnates.

A NINE-LION PATTERN.

The rug weavers of China seem to have been simple folk for the most part who generally followed ancient precedent and only slowly took ideas religious or artistic from those about them. In their designs, it is true, they show less scruple, for we find ancient carved jades and bronzes, old pots of pottery, porcelain and even of iron which have lent weavers ideas of form and sometimes of color. Yet we cannot withhold the name of artist from some of these unnamed craftsmen who made the designs and fixed the color schemes for certain rugs. They must have been men who viewed with poetical emotions the greensward pied with white and gold and purple flowers, the hedges gay with blossoms, gardens crowded with tulips and hyacinth, hedges of the tree-pæony, brown arable lands and black stretches of mud and water of the rice plantations, to have reached such inarticulate harmony as their works evince. They must have enjoyed the landscape set with towns and lakes, the sunset gilding snowclad ranges. Vague impressions of such sights must have sunk into the consciousness of generations of artisans before

they blossomed in one of the great rugs that connoisseurs cherish now.

They are painters who make color-symphonies with the same impulse that guides the country-woman who sews a "crazy-quilt"—but to more fortunate results. Rather should they be compared with the old fashioned rugs of a hundred years ago, made on hand looms which are now hauled out of garrets and put to similar work again.

The study of rugs and their effect on the art sense will go far to explain certain eccentric painters of modern times who in their horror of "telling a story," and in their love for color as such, have hurt the feelings of a good many worthy persons, including curators of museums and professors of art at college, by making paintings which appeal almost exclusively to one's feeling for decoration and have nothing to say to the intellect. Let us mention a Diaz and a Monticelli, a Whistler, a Brangwyn and a Sorolla. These men regard a picture more from the point of a beautiful hanging or rug than from that of a human message. Nature in some of her myriad manifestations is caught on the canvas, just as she is in the rug, that is to say remotely, allusively, poetically. The good curators and professors help to swell the crowd that scoffs, or sniffs, or stands in amaze. They are like the literary critics who find Poe's verses merely jingle—because at bottom of their minds there is no room in the world for several—not to speak of many—aspects of art.

The Chinese have some very definite

A NINE-LION PATTERN, IN WHICH FIVE OF THE BEASTS ARE IN THE CENTRAL MEDALLION.

connecting ideas between certain colors and certain metals, planets, points of the compass and seasons of the year. So have some of our American Indians. Fortunately for art the artists do not take the connection too rigidly, so that while there is often a guiding thread there is not prescription, there is not compulsion enough to do any harm. Thus they take five colors, because there are five fingers and five toes, four points of the compass and one center, etc., and they range them thus: black, green, red,

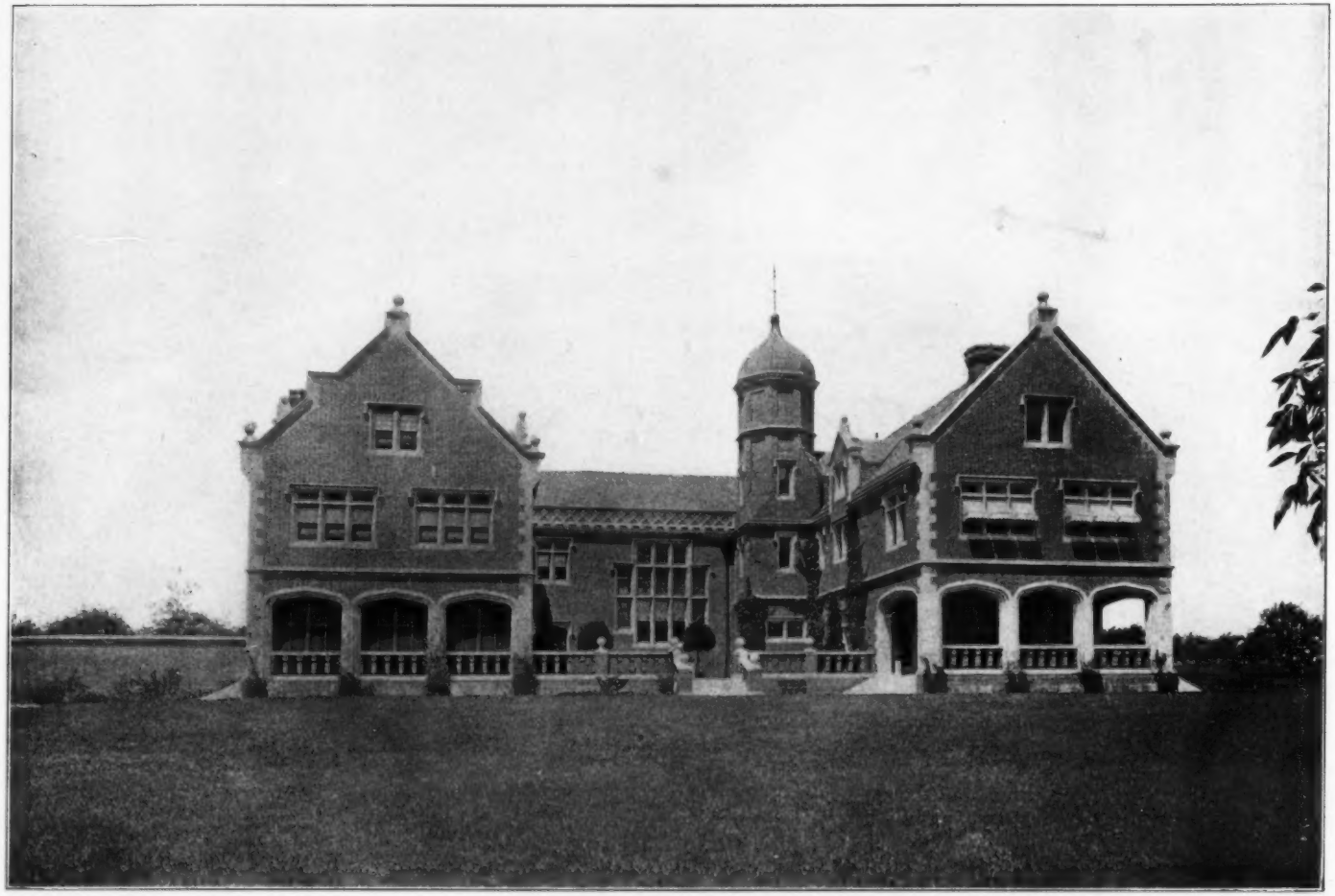
white, yellow—and make a parallel of these five metals in this order: iron, lead or tin, copper, silver and gold—all obvious enough, except that green does not seem to suit exactly lead or tin. Then we have black for the North, green for the East, red for the South, white for the West and yellow for the center. You see that they reserve the gold color for their own Central Flowery Kingdom, since they are naturally the center of the universe, and effect one yellow for the Emperor, other yellows for high persons, and yellow for the national flag. And speaking astrologically one might say of their arrangement of colors and planets, which is thus:

Black	Mercury
Green	Jupiter
Red	Mars
White	Venus
Yellow	Saturn

that Saturn as he is supposed to influence character is by no means inappropriate to that of the Chinese as a race.

Color being so marked a characteristic of rugs, followed after some interval by design or form, and after a longer interval by content or meaning, it may be curious to note that while imperial yellow and mandarin yellow and brown-reds are common, on the other hand we rarely, if ever, get a primary or a blood-red. In place of the strong crying reds we get fine peach colors, apricot, pomegranate, or whatever other name of fruit or flower is chosen to define a hue. Strong direct greens are very rare, except in rugs under the Mohammedan tradition, which is still strong in western China. Orange is not so often seen as hues of yellow, nor is there much of cherry or of rose. These tones are oftener seen in Japan. A robin's egg-blue and blues of dark and light shade are not uncommon. Dull browns, liver colors, mixed yellows, are perhaps the commonest of all and tend to give Chinese rugs that architectural, impassive, massive look which separates them from Persian rugs on the one side and Japanese on the other. The duller reds and blues used with cream-white to lighten these grave grounds result in a tone very difficult to describe, but one that gives æsthetic satisfaction to those who lend themselves to contemplation. For just as good music cannot be comprehended by the casual comer, and demands a long apprenticeship of the ears; so the eyes must have time to absorb the beauties of rugs before one can hope to appreciate their charm.

Charles de Kay.



THE PROCTOR HOUSE.

Ipswich, Mass. E. M. A. Machardo, Architect.

further the work of securing some recognition by the national government of the value of expert architectural and artistic knowledge and advice. The whole campaign is based upon the need that only good art deserves government recognition, and that discrimination in favor of the best prevailing professional and technical standards is merely discrimination in favor of excellence. A generally national policy in relation to the arts means, not a policy of a widely distributing governmental artistic and architectural patronage and opportunities, but a policy of preferring and selecting the very best professional practitioners. Such a policy will still seem to the majority of Congressmen a policy of unfair discrimination against local artists and of undue favoritism on behalf of a small professional clique, and this inheritance from the Dark Ages of American art can only gradually be won away. In spite of its continued vitality, it is gradually disappearing, because as a matter of fact the best professional and technical standards in relation to architectural and the other arts are constantly gaining in authority. They are constantly creating for their own benefit a body of public opinion which is capable of intelligently discriminating between good and bad art, and good and bad artists. A National Fine Arts Council would merely be the official representative of such a body of public opinion. It will increase in authority and in function just in so far as the body of public opinion it represents becomes larger, more coherent, better informed and more discriminating.

ART AND THE ARTIST

American art and architecture has reached a stage in its development which justifies the demand for official recognition, and precisely and only because it has reached an excellence of performance which deserves recognition. In the future, if it wants more emphatic and remunerative recognition, there is but one way to obtain it, and that is the same old way of continuing to deserve it. The situation of the arts in this country is such that they cannot count upon any preference which they do not clearly and substantially earn; and this situation, instead of being one on which architects and artists should commiserate one another, should be a matter for mutual congratulation. As long as this condition lasts it will at least keep them on their mettle, and when it is on the wane—when the tradition of official encouragement of the arts becomes firmly established in this country, as it will be some day—then will be the time to beware of degeneration. Just at present, however, American architecture and art is not in any danger of being pampered either by government or by public opinion. It still has enormous strides to make before it can conquer really encouraging recognition, both from official and unofficial sources; and there is, we repeat, only one way to bring about this result. American architecture and art must become constantly worthy of more emphatic, general and remunerative recognition. The education of American public opinion to take more interest in the arts, and to bring to bear upon them a more intelligent standard of discrimination rests at bottom entirely with the American artist. The public will take more interest in his work, in proportion as that work becomes more really interesting. It will grant the artist more authority in proportion as his work and the prevailing standard of professional judgment becomes more authoritative. At the present time these standards are more authoritative than they used to be, and consequently deserve more recognition; but they are by no means as authoritative as they should be. They do not discriminate as severely as they should against inferior work, however popular or unpopular it may be, and they do not discriminate sufficiently in favor of the really superior work. Only by uncompromising and incorruptible discrimination of this kind can American artistic performance be steadily improved and American popular taste be educated. Education in the arts like charity must begin at home. No architect, who has ever sacrificed in some essential matter the integrity of his own work for the sake of getting or keeping a job, has any license to talk disparagingly of American popular taste. It is he and his like who are keeping American popular taste at its existing level, and every really good architect knows that there are plenty of architects of unimpeachable standard in this country, who make a business of doing work, which is just good enough for their clients. The real enemy to the increasing and accelerating national recognition of the fine arts in this country is not the average benighted Congressman, but the average instructed architect—the architect who wishes recognition which he and his like have not earned by the sacrifices they have made or by the disinterestedly excellent work they have achieved.

FOR A PALACE OF THE STATES

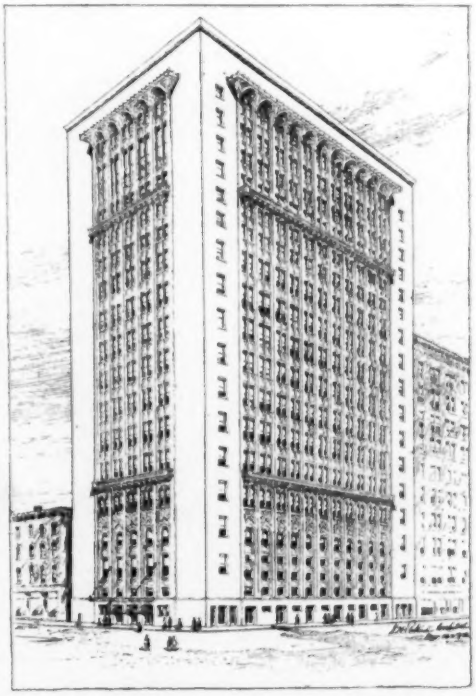
Our national capital has never in its history been the scene of a more concerted agitation for the advancement of architectural and art interests. Steps are being taken to have the duty on works of art removed, or made so nominal as to be inappreciable. The architectural societies, with apparently excellent backing are clamoring for the independence of artistic and constructional work from the bondage of the Treasury and other departments which are not in position to handle the work to the best advantage of the government. And now comes into action again the plea of a decade ago for a structure to house those national functions in which the states are collectively interested, to provide social and educational headquarters and auditorium facilities of sufficient extent for the many conventions for which the capital at present affords such inadequate accommodations.

No doubt, each state could derive substantial benefits from a building of this character in Washington, making it exceedingly worth its while to contribute its proportional share of the fund required. The contact to be had in its halls with the vast store of state intelligence would make it a sort of perpetual national exposition for visitors from widely scattered districts and thus would be founded a popular educational institution of undeniable value.

A NOVEL USE FOR THE SKYSCRAPER

If the designs of Dwight H. Perkins, the architect to the Board of Education, of Chicago, are accepted by that body, the Windy City will be the first municipality to possess a "skyscraper school." To picture, in the mind's eye, just how such a school would or should look, is not easy, but the accompanying perspective shows how the architect has conceived it exteriorly in a seventeen-story structure of not unobtrusive appearance. It is planned to accommodate the various departments of administration of the department of education, the supply department, a spacious auditorium and several school museums, besides a large commercial high school.

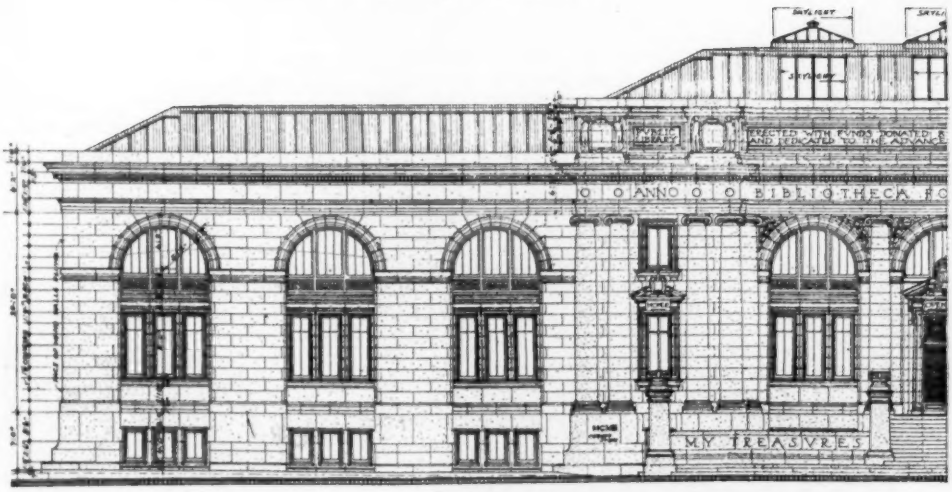
The idea of housing a large number of school children in a skyscraper is, on first thought, a bit revolutionary, but when it is called to mind that this plan proposes a school in which the pupils are no longer children, and, moreover, are in search of a commercial education, the case is somewhat altered, and the natural rejoinder is, "Why not a skyscraper for this purpose?" The pupils are preparing for a business career, which in the majority of cases will be pursued in surroundings not very dissimilar to those to which they would thus become accustomed. Their quarters could be made to exercise upon their minds a valuable influence in their training for their life-work, and there is no good reason why the essential features of a school building for this purpose should not be equally well attainable in a building such as Mr. Perkins



Proposed Skyscraper High School for Chicago.
Dwight H. Perkins, Architect.

proposes as in the accepted type. The surroundings would naturally not be as free as those of a lower structure, with exposure and view round about, but these disadvantages had as well be impressed upon those preparing for the exacting life of confinement which is inevitable in present-day business.

The fate of the idea will doubtless be awaited with interest by other large cities, who have similar school problems to solve.



HALF ELEVATION OF FRONT—COLUMBUS PUBLIC LIBRARY.
Columbus, Ohio.

DRAUGHTSMANSHIP AND ARCHITECTURE

In the Architectural Review (Boston) of last November is to be found a good illustration of the proposition that brilliant draughtsmanship does not necessarily result in good architecture. The reference intended is to the Columbus Public Library, which is shown in this journal in photographs and in working drawings, those clever and widely admired handiworks for which their author has become justly popular with the younger element in the profession. A comparison of these drawings with the photographic views which accompany them cannot but lead to the conclusion that the designer in this case did not have clearly in mind how his design was going to look, especially in that dimension which the elevational drawing does not depict. After a designer has entered the second stage in designing, which usually consists in setting more or less definite limits for the large parts of his composition, he has got to a point where he is no longer in position to see the entire building as he did when recording its initial conception. He has established certain masses and proportions, and it is to refining these that his efforts are concentrated. To all intents and purposes the design of a

VIEW OF FRONT—COLUMBUS PUBLIC LIBRARY.
Columbus, Ohio.

building is determined after this first stage, which apparently produces only the roughest of sketches; the elaborate and careful drawings which are subsequently made are powerless to materially make or mar a design. In the Columbus Library, apparently

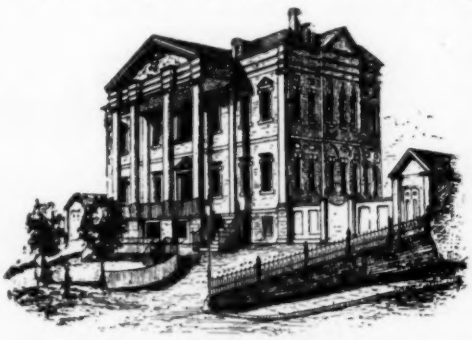
NO. 7 STATE STREET, NEW YORK CITY (ABOUT 1800).

excessive zeal in draughtsmanship was the cause of the unfortunate result which is so apparent in the executed building, and may be readily detected by comparing the two accompanying illustrations. In the drawing it will be noticed that the treatment of the filling for the great window arches appears most emphatic at the level of the impost caps of the piers, whereas in the executed building one is amazed and disappointed to note that what seemed the projecting, emphatic horizontal member in the drawing has withdrawn to a discreet retirement to afford the great arches an adequate depth and give them the appearance of great massiveness. The emphatic horizontal member, which is a string course, has slipped to an uncomfortably low level, which a closer examination shows to be the second-floor beams. The result speaks for itself, and the profession will not be ready to believe that the author of this design

knowingly produced the infelicity shown in this building, but the outcome should serve as a reminder to architects not to allow themselves to be carried away by mere draughtsmanship.

A RELIC OF OLD NEW YORK

It seems a pious scheme, and eke an interesting "proposition" to rescue from oblivion, so far as the camera can do it, the last remaining of the mansions which fronted the Battery, when the Battery was the social center of New York. In fact, it never quite was, but being big enough, for one thing.



"Government House" (Which Stood Opposite Bowling Green, 1791-1815).

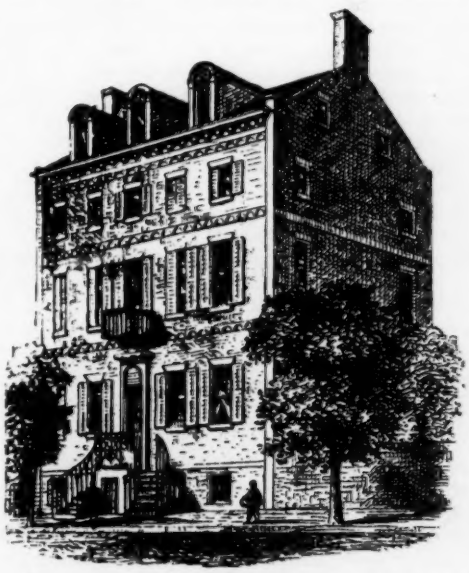
The first "social center" of New York, and, for that matter, of New Amsterdam, was undoubtedly here, or hereabouts, in proximity to the "Fort," of which some bricks were turned up in the excavations for the present Custom House. Under the walls of the fort, and in view of "The Battery," the earliest inhabitants clustered or huddled. But commerce established itself on the East River, not on the North. The "slips" looking towards Brooklyn were busy when there were as yet no preparations for traffic on the Hudson. Colonial New York grew northward and eastward. Of course the lookout from the Battery was in colonial days, as in these days, the finest that Manhattan Island afforded. Only it could not be had for residences, the forts and government buildings cutting it off from inland. Whitehall Street was a mere lane under the landward wall of the fort.

The British evacuation, November 25, 1783, followed on the same day by the occupation of

> The Old Continentals
> In their ragged regimentals

was really the first signal for the opening of Battery Park to settlement. That famous farewell luncheon at Fraunces' Tavern occurred ten days afterwards, December 4, just around the corner. It was some years afterwards before the question of the "final disposition" of the Battery really came up. When Washington came on in 1789 to be inaugurated President, Wall Street was the site of the most "elegant" residences, and the swellest house that could be found for the President-elect was at the corner of Franklin Square and Cherry Street. Think of that! Franklin Square, by the way, was not named after Benjamin, but after one Walter, the owner of the house which Washington took over, and so the statue of Ben, on the front of the Harper Building, "has nothing to do with the case." It is true that, a little later, Washington found his residence too far away, and migrated to lower Broadway, which continued to be the seat of fashion for another generation. South William Street was at the same time "the shopping district. So late as 1835, when the Astor House was building, the New York Mirror complained that Broadway was being invaded not only by "boarding houses," but actually by "stores."

That the Battery was the most eligible place of residence in Manhattan was presently recognized, and in the most striking way. One of the baits that New York offered to be made the "Federal City" was the building, in 1790, of "Government



No. 9 State Street (about 1795), the Scene of the Grand Ball in Honor of Lafayette, 1824.

House," opposite the Bowling Green, and on the very site of the demolished fort. There it stood for twenty-five years. The Federal government had in the meantime migrated to Philadelphia and thence to Washington, and of course the house was never occupied for the purpose of a "White House," for which it was intended. Note, also, that the British title reverted not to the government of the United States, which did not really yet exist in a condition to "take title," but to the Province, now become the State of New York. This change of status is recognized in the name of "State" Street. Government House was appropriated to the official uses of the Governor of New York, and was successively inhabited by Governors Clinton and Jay. John McComb, the putative architect of the City Hall and of St. John's Chapel, is also the putative architect of this building. But it may be questioned whether the ascription be not a confusion. The John McComb to whom the other buildings were ascribed, was only 27 when "Government House" was built. He continued to be "junior" until about 1810. Most likely it was his father who was the builder of "Government House," and hired a draughtsman of the plans. Not that it matters much who drew them. It was demolished in 1815, and its place taken by the row of seven houses which was in turn torn down only the other year to make room for the new Custom House, remaining familiar to the contemporaneous New Yorker as, in its latest estate, the abode of steamship companies and foreign consulates. In its earlier estate it was a very fashionable row of houses. In one of them lived, and continued to live until within the sixties of the last century, Stephen Whitney, one of the richest New Yorkers of his time; in another, John Hone, brother and partner of the Mayor and diarist Philip; in a third, Samuel Ward, the banker, brother-in-law of Dr. Francis, the local antiquary and historian. So you will observe that the actual occupant of the Bowling Green site, the new Custom House, is the fourth occupant, having been preceded by the row of dwellings, the "Government House" and the Dutch fort. In spite of which, some remains of the earliest occupant were exhumed in the excavations for the latest, the "Holland bricks" of the old Dutch fort, as already hereinbefore set forth.

Curiously, no information can be had about the history of this house, probably the most important and pretentious of the whole row. I say so, because we have abundant information about its next-door neighbor but one, No. 9. There was a New Yorker in New York at the outbreak of the Revolution, John Morton, who was so active and bitter a Whig that the officers of the British garrison called him "the rebel banker." He found it convenient and agreeable to retire to Morristown during the British occupation of New York. His son Jacob married the daughter of Carey Ludlow, who, in the closing years of the eighteenth century or the opening year of the nineteenth, had built upon his land, from which the demolition of the fort had opened the view down the bay, a mansion very famous in its day, the wonder of New York; in fact, containing, as it did, twenty-six apartments, exclusive of servants' quarters. The house now survives only in an old print, from which it is evident that there was then no house adjoining it to the east, that is, no No. 8. But Jacob went to live with his father-in-law at No. 7, and made it a "social center" for many years. No. 7 is noteworthy as the scene of the grand ball given to Lafayette in 1824, and it is an entirely safe "postdiction" that the eyes of the aged Marquis rested upon this very front that we see. Nay, a lady of an old New York family recalls a family legend that for the purpose of the Lafayette ball, a bridge was thrown across the garden at the side to the next house, that is, to No. 7, which was also employed for the festal purpose. But even though No. 7 had no recorded or traditional history, it were quite safe to join the poet in saying:

Here there was laughing of old, there was weeping,
Haply, of lovers none ever will know,
Whose eyes went seaward a hundred sleeping
Years ago.

It must, in truth, have been a hospitable house and a merry one in its time, being evidently designed and built for an owner of social tastes and aspirations. The architectural motive of the front is striking. One wishes the good man had had a better architect to carry it out. The curve of State Street is specially sharpened just here, and is recognized in the design of the house. One wishes it had been recognized in a continuous curve instead of the rather awkward and abrupt jog. That would have cost some money, doubtless, but would have been worth it. One doubts whether the good man had an architect at all. The very unclassical attenuation of the columns, including two stories, would have made a regular practitioner of the period "stare and gasp." It took a carpenter, who was no respecter of "orders," to design the actual

loggia (not that they probably called it that). Moreover, there is not much practical reason for the attenuation. Another platform over the second story, like that over the first, would have made an additional and eligible veranda, which would have enabled the columns to be reduced to the classical proportions of those of the basement. And this interpolation would not have darkened the upper rooms unduly, for you see the successful pains which the builder has taken to secure direct and uninterrupted light for them from the sides, in addition to the interrupted light from the front. It is a nice old house, all the same, and gives us the impression of having been inhabited by nice people. How immensely more civilized it looks than its either of its two tin-corniced neighbors! The chances are that the plainly impending skyscraper of the first decade of the twentieth century, which is to wipe them all out, will not be so grateful an object to contemplate as this relic of the first decade of the nineteenth. *M. S.*

SWEET'S INDEXED CATALOGUE OF BUILDING CONSTRUCTION OUT FOR 1909

To-day the architectural profession finds itself in better shape than ever in regard to trade catalogues, due to the publication of the third annual edition of "SWEET'S." This volume of catalogues and other trade literature, organically arranged and thoroughly indexed and cross-indexed, is bigger and more complete than ever. More than seven hundred of the biggest building material manufacturers are represented in the book, which has now assumed formidable proportions, proportions that perhaps tend very closely to the unwieldy. The publishers, however, have a book of reference to deal with, and books of reference are governed by rules that do not pertain to books of literature. It is certainly extremely annoying in, say, the case of a many volume dictionary, to turn to a word in one volume and then find it necessary to turn to another volume, and perhaps still another, before the final definition afforded by the work is elicited. "SWEET'S," of course, is a book for the specification table and once there, it is complete and ready to answer practically any question that the architect or draughtsman may ask. The book is well printed on handsome paper, is finely bound and is, in its way, monumental. The profession is gradually eliminating its trade literature lumber, almost entirely due to the service which "SWEET'S" offers as a substitute.

The volume is very thoroughly indexed. Indeed, the index covers some ninety-two pages of three-column type. A careful search through the book shows it has been improved very materially, but in nothing more than by the addition at the end of the volume of a "Checking List." This Checking List is invaluable to architects and to others. Here we find every element of building construction and equipment enumerated in the order called for by the specification writer. "General Conditions, Preliminary Work, Foundation Work, Excavation, Cement, Portland, Concrete, Concrete Reinforcement, Dampproofing and Waterproofing, Concrete Block Work, Lime, Sand, Cement, Mortar, Lime Mortar, Cement and Lime Mortar, Structural Steel" and so on to "Furniture and Fixtures, Organs," etc., are covered, detail within detail. Architects have been looking for a work of this kind for some time and here it is, logically and scientifically done. The work of making this index has been entrusted to Mr. Duncan M. Robertson, the well-known specification expert, one of the few men to-day who has a scientific grasp of the complexities of modern specification work in all its bearings.

PROGRESS IN GRANT PARK, CHICAGO

To general readers the most interesting portion of the Report of the South Park Commissioners in Chicago, for the period ending February, 29, 1908—though the work of this Commission has long been unusually interesting and broad—will be that which deals with Grant Park, the big lake front park opposite the centre of the city. The reclamation of all the submerged area was completed, the final grading was begun, driveways and walks were being graded, sewage and water supply pipes installed, and planting was well under way. The trustees of the Field Museum formally entered into contract for the erection in the park of a museum building to cost $4,000,000, the preliminaries were arranged for the construction there of the million dollar Crerar Library, and the site selected for the new St. Gaudens statue of Lincoln. Yet, as the park covers an area of 205 acres, it will be much more than simply a building site even for two buildings so large as contemplated, and one is inclined to look with kindness on the statement of the Report, that it "will be the most beauti-

ful and most serviceable park contiguous to the business district of any city in the world."

Included in the Report is an interesting statement prepared by the Olmsted Brothers, who are the landscape architects of the park, concerning the difficulty of the problem of design which it presented. The railroad is to be electrified, and in making the plans it was assumed that it would be decked over, the space above it being treated partly as a great paved plaza and partly in terraces clothed with turf, flower beds and trees. It was then required so to locate the Museum that it would be seen effectively from Michigan Avenue. This meant that as it would be far eastward of the railroad it would have to set at such height over the cover of the tracks that when seen from Michigan Avenue its base would not seem to be cut off. Further, it stands so far beyond the western edge of the tracks that it would not be possible to treat the space between Michigan Avenue and the tracks at the avenue level and then step up by a terrace treatment to the level of the ground about the Museum, for that would have precisely the effect which it was desired to avoid. Again, it was found that if the terrace were just high enough to cover the railroad and the Museum were stilted up above the terrace level so high as to be seen over the edge of it from Michigan Avenue, there would result an ungainly proportioning of space, and that the terrace being wider than the space that it overlooked would have the effect of converting that into a mere depression. It was a most interesting problem. The device adopted to solve it is a continuous sloping surface, rising from Michigan Avenue across the tracks to a point comparatively near the building. It is necessary to make the slope of this plaza almost exactly three per cent., which is steeper than is aesthetically desirable. However, this is not enough seriously to detract from the design, and the Olmsteds point out that the grade of the great plaza rising to the Museum and palace of Versailles is slightly more than three per cent. For the rest, the park design shows the Crerar Library as balancing the Art Museum, at about the Congress Street axis. Jackson Boulevard and Harrison Street are carried straight through to the water as park drives. Beyond the tracks, to either side of the Field Museum, and separated from it by space and planting, are large meadows and ample provision for athletics. Along the water front extends a mall shaded by six rows of trees and overlooking the quay, or strand, which forms the actual water margin. At its north and south ends the mall, rising, terminates in great quadrangles surrounded by colonnades serving as shelters and places of refreshment—to be "great public verandas for the people of the city."

The Architectural Record regrets an error in its February issue in the name of Mr. George C. Boldt, whose Heart Island estate is described in that issue. The name appears there erroneously under the illustrations as "Charles C."

In the leading article of this issue the title to illustration Fig. 5 should read "L. L. Buck, Engineer," instead of "Department of Bridges, Engineers."

RUSSELL STURGIS

(Continued from frontispiece.)

in his case, knowledge was power. But knowledge combined with geniality, with a desire to find out the good rather than the bad in the work he set himself to judge. Combined also with perfect and unsuspectible disinterestedness. Never among the leaders of the architectural profession, he was never among its militant members. From the time when he became conspicuous in the councils of our art world, and received all the honors it had to pay, in the shape of presidencies and the like distinctions, he was already "hors concours." Everybody knew that he had no "axes to grind," that whatever he did or said was done or said simply in obedience to the dictates of an unselfish and impersonal interest in art, and from a desire for its advancement. In no age can there have been any more uncommercial interest in matters which are "matters of business" to so many than the interest of Russell Sturgis in art, in this very commercial generation. It was this disinterested interest which gave him his unique position, and enabled him to exert a unique influence. Not only will the readers of the Architectural Record miss him sorely. He will be missed on many and many an occasion when the question is of public art, and the realized public need is of a counsellor in regard to whom there is no question either of his knowledge or of his unselfishness.

MONTGOMERY SCHUYLER.